Dr. ERICA BISESI

Contact

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GENERAL PRESENTATION

Erica Bisesi's academic background is multidisciplinary: PhD in mathematics and physics at Udine University in 2007, MSc in astroparticle physics at Trieste University in 2002, MA Degree in piano performance at Trieste Conservatory in 1996, and MMus in Music Theory and Analysis (in progress). Born in Gorizia (Italy), she contributed to several large-scale research projects (theoretical astrophysics, experimental elementary particle physics, astrobiology, systematic musicology, music interpretation and analysis, biological foundations of music, physics, maths and music education).

After completing her PhD in astroparticle physics at the Udine University in 2007 with a theoretical and experimental project on the gamma-ray emission from dark matter clumps in the Galactic halos and their possible observation by means of the MAGIC Telescope, her interests and activities moved at the same time towards systematic musicology and astrobiology.

Her career as a musicologist began in 2007, first at the Department of Speech, Music and Hearing at KTH, Stockholm, and then in several projects on music performance and interpretation, expression and emotion, music cognition, the psychology of music, psychoacoustics, music theory and analysis, music information retrieval, ethnomusicology (Armenian Epos and Tagh, Indian music, Portuguese guitar) and music education. She directed or participated in several projects on the systematic and computational musicology at the Centre of Systematic Musicology at the University of Graz (2009-2016) and the Royal Institute of Technology in Stockholm (2016-2017). She is currently adjunct professor at the Faculty of Music, University of Montreal (since 2020) and associate researcher at the Institut Pasteur in Paris (since

2018), where she is working in Intermuse, an interdisciplinary project on the biology and anthropology of music cognition and neuroscience, and in ProAppMaMu – an interdisciplinary project on the relationship between music and maths (in collaboration with the Institute for Advanced Mathematical Research – University of Strasbourg, the IRCAM and the Universidad Complutense in Madrid).

In October 2009, Erica was awarded a Lise Meitner postdoctoral fellowship for a two-year project entitled "Measuring and Modeling Expression in Piano Performance" by FWF, Austria. In December 2011, FWF funded her five-year Stand-Alone project "Expression, Emotion and Imagery in Music Performance". In June 2016, she was granted for a 5-month teaching/research/artistic stay for university teachers, researchers and artists by SAIA, Slovakia. She presented the results of her research in musicology in conferences, lectures and lecture-recitals at leading institutes all over the world.

She taught acoustics and psychoacoustics at the Udine Conservatory from 2004 to 2007, psychoacoustics and music cognition at the University of Graz from 2014 to 2015, introduction to acoustics and organology, music structure, expression and emotion at the Comenius University in Bratislava in 2017, and is active as lecturer in computational methods for music analysis at the University of Montreal (since 2018).

Her research in astrobiology focused first on the diversification of probabilities associated to simple and complex (multicellular) life, in a multidimensional scenario possibly involving different degrees of "hardness" and dependence on environmental features, like stellar and planetary-related factors (2010, present). More recently, Erica was involved in a second research project whose aim is to explore the impact of different vegetation candidates on exoplanets' climate and habitability (2018, present). To this purpose, in November 2018 she was granted by CNR, Italy, for a short-time subproject on "Parameter space study of a system of partial derivative differential equations, representing a simple vegetation growth scenario coupled to a climatic model". She is currently member of the Astrobiology Group of the Astronomical Observatory of Trieste, where she works as a postdoc researcher on several aspects of exoplanets' climate and habitability (Project: "Climate models with bio-feedbacks for applications to studies of exoplanets within the project Life in Space", granted by Agenzia Spaziale Italiana and Istituto Nazionale di Astrofisica). Results of all these studies have been or are being presented in several international conferences in Europe.

Erica collaborated with universities and conservatoires in Armenia (State Conservatory in Yerevan, National Academy of Sciences of the Republic of Armenia, Komitas Museum-Institute in Yerevan), Austria (KFU, KUG), Belgium (IPEM in Ghent), Canada (Faculty of Music of the Montreal University, OICRM, Polytechnique Montréal), Finland (Finnish Centre of Excellence in Interdisciplinary Music Research in Jyväskylä), France (Institut Pasteur, CNRS, SFAM, EHESS and IRCAM in Paris, IRMA, GREAM and ACCRA in Strasbourg), Italy (Associazione Culturale Mask in Bologna, GATM, Fondazione Istituto Liszt in Bologna, Associazione Seghizzi in Gorizia, Opusmodus community in Venice, Conservatoires of Milano, Como, Novara, Bologna, Udine and Trieste, Universities of Udine, Padua, Bologna and Trieste, CNR, INFN and INAF), Portugal (University of Coimbra), San Marino

(Associazione Culturale Mask in San Marino), Slovakia (Department of Musicology at the Bratislava University), Spain (Universidad Complutense in Madrid), Sweden (KTH), Switzerland (CSI in Lugano).

Erica received her first music education at the age of five, and completed a MA Degree in Piano Performance with Roberto Repini at Trieste Conservatory in 1996. Over the following ten years, she studied with the conductor Francesco Mander, the pianists Bruno Canino in Milan, Aquiles Delle Vigne in Salzburg, Florence and Rome, Vladimir Krpan in Zagreb, Anna Kravtchenko in Rovereto, and Andreas Woyke in Graz. She is now active as a soloist and in chamber music ensembles.

During the last years, she devoted special attention to combining her research activity with performance practice. In her current studies on musicology, she usually investigates the structure, historiography, perception and expression of her concert repertoire. In 2017, she participated as a concert pianist in a GATM project on music performance/interpretation and music analysis (Conservatory of Novara, 2016-2017; International Conferences on Music Theory and Analysis in Strasbourg and Rimini, 2017; Workshop *Análisis & Interpretación*, Barcelona, 2020). Other noteworthy interdisciplinary activities in-between music and science include participation as a concert pianist in the multimedia shows "Concerto per Galassie e Pianoforte", in collaboration with the Astronomical Observatory of Trieste (2014), and stage direction and performance in the "XTREME Recital" – a ground-breaking production supplementary to the XTREME ESOF 2020 exhibition, where life in extreme environments serves as a source of inspiration for blending natural sciences, theatre, classical and electronic music, music technology and interactive systems.

Erica speaks fluently five languages, and can manage basic communication in other two. Fortunately for her life and her work, she loves to move.

ACADEMIC CURRICULUM VITAE (detailed)

Main area of research

Last 10 years: Systematic and computational musicology: music modeling (computer-assisted music theory), music theory and analysis, acoustics, music information retrieval, expressive music performance (theory, data analysis, applications), psychology and perception of music, music and emotion, music cognition, psychoacoustics and psychophysics, empirical aesthetics; interdisciplinary musicology (synergetic interactions among humanities, sciences and practice); ethnomusicology (Armenian, Indian and Portuguese music); anthropology of music, biological foundations of music; applications in music education; Astrobiology. **Previously:** Physics: particle physics, astrophysics, cosmology, physics education.

Academic career and positions held to date

Research positions:

1. 2020 Apr – : Adjunct professor at the Faculty of Music, Montreal University, Canada
   Projects: perception of musical tempo, expressive performance, computational modelling of music structure
   Advisor: Sylvain Caron
2. 2021 Mar – : 1-year position as postdoctoral researcher in Astrobiology at the Astronomical Observatory of Trieste –INAF, Italy (funded by ASI)
   Project: "Climate models with bio-feedbacks for applications to studies of exoplanets within the project Life in Space"
   Advisor: Giovanni Vladilo
3. 2019 Jan 7 – 2019 Mar 31; 2018 Jun 1 – 2018 Aug 31: 6-month position as researcher in Music Cognition at the Institut Pasteur, Paris, France (funded by SACEM)
   Project: INTERMUSE – "Fondements communs à l'écoute musicale et à la mise en place de la communication humaine inter-individuelle" [1]
   https://research.pasteur.fr/en/project/intermuse/
   Advisor: Pierre Legrain
4. 2018 Dec 1 – 2018 Dec 31: 1-month position as researcher in Astrobiology at the CNR, Pisa
   Project: "Studio dello spazio dei parametri di un sistema di equazioni differenziali accoppiate alle derivate parziali, che rappresentano un semplice modello di crescita della vegetazione e un modello climatico" [2]
   Advisor: Antonello Provenzale
5. 2017 Nov 1 – 2017 Nov 30; 2016 Nov 1 – 2017 Feb 28: 5-month position as researcher in Computational Musicology of Music Performance at the KTH - Department of Speech, Music and Hearing, Stockholm
   Project: "A perceptual-based accent model in Western tonal music"

[1] EN: "Commonalities [and individual] differences in music listening and in the establishment of inter-personal communication"

[2] EN: "Parameter space study of a system of partial derivative differential equations, representing a simple vegetation growth scenario coupled to a climatic model"

Advisor: Anders Friberg

6. 2017 Mar 1 – 2017 Jul 31: 5-month position as lecturer at the Department of Musicology – Faculty of Arts, Comenius University, Bratislava, Slovakia (scholarship funded by SAIA, Slovakia)
   Courses: Introduction to Acoustics and Organology; Music Structure, Expression and Emotion
   Advisor: Vladimir Zvara
7. 2012 Mar 1 – 2015 Jul 31; 2015 Sep 1 – 2015 Dec 31: 3.75-year position as senior postdoctoral researcher in Music Psychology and Music Performance at the Centre for Systematic Musicology, University of Graz (funded by FWF)
   Project: FWF Stand-Alone Project P 24336 – G21 "Expression, emotion and imagery in music performance"
   Project leader: Erica Bisesi
8. 2009 Dec 1 – 2011 Nov 30: 2-year position as postdoctoral researcher in Music Psychology and Music Performance at the Centre for Systematic Musicology, University of Graz (funded by FWF)
   Project: FWF Lise-Meitner Project M 1186 – N23 "Measuring and modelling expression in piano performance"
   Project leader: Erica Bisesi / Advisor: Richard Parncutt
9. 2008 Nov 15 – 2008 Dec 31: 1.5-month research activity in Physics Education at the Department of Physics (now the Department of Mathematics, Computer Science and Physic), Udine University, Italy (scholarship funded by the Department of Physics, Udine University)
   Advisor: Marisa Michelini
   Project: "Proposte didattiche sul concetto di tempo in fisica classica e nella relatività ristretta e generale" [3]
10. Apr – Jul 2007: 3-month research activity in Computational Psychoacoustics at KTH, Stockholm ("Scholarship in Scientific Disciplines" (scholarship offered by the Italian Institute of Culture "C. M. Lerici" in Stockholm)
    Advisor: Roberto Bresin
    Main research activities: *(i)* participation in an experiment on the perception of expressiveness in musical performance within the EU project *BrainTuning* (experiment preparation, measuring and data analysis), *(ii)* computational modeling of structural and performance aspects of music, theoretical models vs. analysis of commercial performances
11. Nov 2003 – Feb 2007: active member (as PhD student) of the "MAGIC Collaboration" in experimental physics – http://wwwmagic.mppmu.mpg.de/
    Advisor: Alessandro De Angelis
12. Apr-Sep 2003: postgraduate research in Astroparticle Physics (scholarship offered by INFN)
    Advisor: Guido Barbiellini Amidei

Teaching Positions:

[3] EN: "Educational proposals on the concept of time in classical physics and in special and general relativity"

1. August 2020 – (in Italian), *Come potrebbero essere fatti I mondi alieni? Le risposte della scienza* [4]*,* Campus Estivo di Matematica, Fisica e Astrofisica (Secondary School), Bardonecchia, Italy
2. April 2020 – (in French), Adjunct Professor at the Faculty of Music, Montreal University, Canada
   (to date: *Analyse musicale et interprétation* [5]*,* research seminar, Master and Doctorate in Music Interpretation, musicologists, composers)
3. Jan 2020 (in Italian): *La scienza della musica. Stabilire un ponte tra matematica, fisica, arte e scienze umane* [6]*,* Campus Invernale di Matematica, Fisica e Astrofisica, Seconda Sessione (Secondary School), Bardonecchia, Italy
4. March 2018 (in French): *(i) Analyse et interprétation* [7], research seminars, Master and Doctorate in Music Interpretation and in Musicology, and *(ii) Analyse de la musique du XXe siècle* [8], Bachelor in Music (Performance, Composition and Musicology), Faculty of Music, Montreal University, Canada
5. Summer Semester 2017 (in English): *(i) Úvod do hudobnej akustiky a organológie* [9] and *(ii) Music Structure, Expression and Emotion*, Bachelor and Master in Musicology, Comenius University in Bratislava, Slovakia
6. Summer Semesters 2015 and 2014 (in English and German): *Psychoakustik und Musikkognition* [10], Bachelor in Musicology, University of Graz, Austria
7. Sep 2008 – Jul 2009 (in English): *Physics in English*, European Linguistic Liceo in Gorizia (Secondary School), Italy
8. Academic Year 2008-2009 (in Italian): *Astrophysics and Astrobiology,* University of the Third Age, Gorizia, Italy
9. 2007–2008 (in Italian): contract professor, *Laboratorio di Meccanica (La Fisica della Musica)* [11], SSIS (Post-Master Specialization School for Secondary Teaching, physics) at Udine University, Italy
10. 2004-2007 (in Italian): contract professor (as external expert), *Acustica e Psicoacustica* [12], Udine Music Conservatory, Triennio and Biennio Superiore Sperimentale (i.e., Bachelor and Master Degrees), Udine, Italy

Main projects

SYSTEMATIC AND COMPUTATIONAL MUSICOLOGY

4 EN: "How might alien worlds be done? The answers of science"
5 EN: "Analysis of the 20th-century music"
6 EN: "The science of music. Creating a bridge between mathematics, physics, arts and human sciences"
7 EN: "Analysis and interpretation"
8 EN: "Analysis of the 20th-century music"
9 EN: "Introduction to Music Acoustics and Organology"
10 EN: "Psycoacoustics and Music Cognition"
11 EN: "Laboratory of Mechanics – The Physics of Music"
12 EN: "Acoustics and Psycoacoustics"

1. **PROAPPMAMU – PROCESSUS ET TECHNIQUES D'APPRENTISSAGES DES SAVOIRS « MATHEMUSICAUX » : PEUT-ON APPRENDRE LES MATHS A PARTIR DE LA MUSIQUE ?** [13]
   Program name: Processus et techniques d'apprentissages [14] – AAP 2020
   Role: Researcher
   Team: Moreno Andreatta, Pierre Guillot, Xavier Hascher, Pierre Legrain, Alain Letailleur, Nathalie Hérold, José-Luis Besada, Corentin Guichaoua, Erica Bisesi, Marie Marty, Victoria Callet, Riccardo Gilblas, Matias Fernandez Rosales
   Funding: MITI (Mission for the transversal and interdisciplinary initiatives of the CNRS), France, 35,000 €
   Institutions: CNRS / IRMA – Strasbourg University, ACCRA, GREAM and HEAR – Strasbourg University, CNRS / IRCAM-STMS, Sorbonne Université, CNRS / Institut Pasteur, Universidad Complutense de Madrid
   Lifetime: 2020 – present
   Status: in progress
   Abstract: By reversing the traditional perspective favoring applications of mathematics to the arts, and in particular to music, this research project proposes to start from music – and its theoretical, analytical and compositional foundations – as well as their perception and cognition, to turn back to the maths. Based on cutting-edge research in the field of computational musicology, the project aims at exploring educational methods and innovative learning techniques in the fields of mathematics, taking advantage of the anchorage to human perception that is offered by music. The learning protocol is based on *The Tonnetz* web environment – an original and innovative software in the field of geometric and topological representations of musical structures and processes, and gives rise to an unprecedented collaboration among mathematicians, computer scientists, musicologists, psychologists of perception and neuroscientists.
   URL: http://repmus.ircam.fr/moreno/proappmamu

2. **MODELLIZZAZIONE COMPUTAZIONALE DELLA DISTANZA PERCEPITA TRA COLLEZIONI DI ALTEZZE** [15]
   Program name: Master Analisi e Teoria Musicale [16], Università della Calabria
   Role: Researcher as Master student
   Team: Erica Bisesi, Antonio Grande
   Institutions: GATM, Università della Calabria
   Lifetime: 2017 – present
   Status: in progress

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[13] **PROAPPMAMU – PROCESSES AND LEARNING TECHNIQUES OF "MATHEMUSICAL" KNOWLEDGE: CAN WE LEARN MATHS FROM MUSIC?**

[14] Learning processes and techniques

[15] **COMPUTATIONAL MODELING OF THE PERCEIVED DISTANCE AMONG PITCH COLLECTIONS**

[16] Master in "Musical Analysis and Theory"

Abstract (quoted from last presentation): Il presente studio propone un modello computazionale di distanza tra set, basato sull'integrazione di cinque diversi approcci teorici e relativo confronto con i risultati di un'esperienza percettiva. Si prendono in considerazione: tre modelli di distanza basati sulla prossimità intervallare (Rahn, 1979-1980; Morris; 1980; Lewin, 1979-80), un modello di voice-leading per la musica atonale (Straus, 2003) e la generalizzazione di un modello psicoacustico di distanza tra fondamentali (Parncutt, 1988). In una prima fase del progetto (Bisesi, 2017), ciascun modello era stato applicato a delle coppie di collezioni estratte da tre diversi brani di musica post-tonale: *Canone per voce e clarinetto op. 16 n. 2* di Webern, *Mikrokosmos n. 84 (Merriment)* di Bartok, *Poema op. 69 n. 1* di Scriabin. Le coppie di set erano state scelte a partire da analisi delle simmetrie interne ai brani, loro rispettive segmentazioni e applicazione dei principi della set theory. Per i calcoli matematici, si era utilizzato *athenaCL* (Ariza, 2002) e un software personale (Bisesi, Friberg e Parncutt, 2019). Tale stadio preliminare si era concluso con un'interpretazione qualitativa della struttura formale dei brani in termini di singoli modelli. Esso aveva incluso anche un confronto con una prima ricerca empirica volta a testare la percezione della distanza su un numero ridotto di ascoltatori, ai quali erano state presentate delle realizzazioni preliminari degli stimoli, per un solo brano. Estendendo i risultati della fase precedente, presentiamo ora una più accurata esperienza percettiva, seguita da un'analisi di regressione dei dati sperimentali e dalla stima della relazione funzionale tra questi ultimi e l'insieme dei cinque modelli. L'obiettivo finale è quello di attribuire a ciascuno di essi un peso nel dominio della percezione.Venti musicisti esperti hanno giudicato la distanza percepita tra 32 coppie di stimoli appartenenti ai tre brani sopraelencati, più 8 coppie di controllo corrispondenti a situazioni estreme, su una scala graduata da 1 a 3. Ciascuna coppia è stata normalizzata al Do4, presentata in tre realizzazioni differenti (arpeggi ascendenti, arpeggi con altezze secondo l'ordine scritto in partitura, accordi) e seguendo un ordine casuale. Per realizzare l'esperienza, è stata creata un'interfaccia grafica apposita in *Psychopy*. A completamento del test percettivo, i soggetti hanno compilato due questionari, il primo volto a individuare le strategie cognitive seguite e il secondo a classificarne la modalità (se di tipo analitico o empatico). Quanto a strategie cognitive, i soggetti si sono focalizzati, principalmente, sul riconoscimento delle singole note e sulla colorazione timbrica degli accordi. Dall'analisi dei benchmark si evince che i giudizi sugli arpeggi in cui le altezze seguono l'ordine scritto in partitura sono scarsamente attendibili, mentre quelli sugli accordi lo sono in misura direttamente proporzionale alla similarità prevista. Uno dei risultati di una prima analisi di regressione è illustrato dalla figura sottostante, la cui tendenza è condivisa da tutti i brani: è preferita la combinazione dei modelli di distanza basati sulla prossimità intervallare e del modello psicoacustico di distanza tra fondamentali, con l'esclusione dei modelli di voice-leading ($r_{Pearson\_Scriabin}$=0,96; < $r_{Pearson}$ >=0,82). Il nostro studio si propone di integrare le ricerche precedenti e confrontarsi con esse (ad esempio, Milne, 2014).

URL: https://www.gatm.it/jg-admin/ckeditor/kcfinder/upload/files/Abstract%20Book%2C%20Convegno%20GATM%202020.pdf (pp. 12-13)

3. **MEASURING AND MODELING EXPRESSION IN PIANO PERFORMANCE**
M 1186-N23
Role: PI
Team: Erica Bisesi, Richard Parncutt, Anders Friberg
Funding: FWF Grant – Lise Meitner Fellowship, Austria; 145,040 €
Institution: Karl-Franzens University, Graz, Austria
Lifetime: 2009 – 2011
Status: concluded
Abstract: Systematic musicology employs concepts and methods from a wide range of parent disciplines, including mathematics, physics, computer science, biology, and the cognitive and social sciences. Musical expression involves structural, emotional and bodily aspects. We focus on structural expression in piano music – the communication of musical structure by variations of timing, dynamics, articulation and pedalling. Sundberg and Friberg developed *Director Musices*, a system of context-dependent rules that introduces expressive deviation into automatic performances of input score files. We combine this generative approach with the music-theoretical, accent-based approach of Parncutt (2003). An accent may be regarded as any event to which a listener's attention may be attracted. Immanent accents may be deduced from the score and are associated with (temporal, serial) grouping (phrasing), metre (downbeats), melody (peaks, leaps) and harmony (or dissonance). Performed accents in piano music are generated by changes in timing, dynamics, articulation and pedalling, and vary in amplitude, form (amplitude as a function of time), and duration (the period of time during which the timing or dynamics are affected). We ask how performed accents depend on immanent accents. For practical reasons, we neglect other influences on musical expression. We plan to adjust Director Musices in two ways: conceptually, by introducing these accent-based concepts into the documentation, and mathematically, by adjusting algorithmic formulations, inspired by accent theory. The mathematical adjustments are made by small steps that are repeatedly checked by two empirical procedures: (i) comparison of generated performances (e.g. in MIDI format) with a databank of recorded performances, and (ii) perceptual experiments to evaluate the musical quality of generated performances.
URL: https://pf.fwf.ac.at/project_pdfs/pdf_abstracts/m1186e.pdf

4. **EXPRESSION, EMOTION AND IMAGERY IN MUSIC PERFORMANCE**
P 24336
Role: PI
Team: Erica Bisesi, Richard Parncutt, Anders Friberg, Jennifer MacRitchie, Giuseppe Cabras
Funding: FWF Grant, Stand-alone Projects, Austria; 257,430.60 €
Institution: Karl-Franzens University, Graz, Austria
Lifetime: 2012 – 2107
Status: concluded
Abstract: In FWF Lise Meitner Project M 1186-N23 (2009-2011), we are studying how performed accents (timing, dynamics, articulation) depend on immanent accents (structural, metrical, harmonic, melodic). By adapting Director Musices (DM), a system of context-

dependent performance rules (Sundberg et al., 2003), we have achieved a new balance between the local (individual accents) and the global (hierarchical phrase structure) (Bisesi & Parncutt, 2011; Bisesi et al., 2011; cf. Cook, 2011). Like accents, emotions may be performed (added during interpretation) or immanent (latent in the score, e.g. a meditative nocturne, a heroic march). We now ask: Which emotions are elicited by what kind of performed emphases at which immanent accents? What connects the timing/dynamic shaping of individual accents to emotions or implied motion? What are the consequences for musical meaning (imagery, associations, metaphors, archetypes)? In musicians' descriptions of performances, how are their words cognitively organised? How might well-founded answers to such questions be integrated into current interfaces for expressive control of music performance? In addressing these issues we take advantage of rules for structural, emotional and gestural expression (GERM, Juslin et al., 2002) and multidimensional representations of (musical) emotions (Russell, 1980; Schubert, 1999). Sloboda (1991) relates immanent structural elements such as sequences and unexpected harmonies to physiological responses like shivers and tears, anticipating our local, accent-based approach; we explore to what extent a reductionist approach can predict the emotional quality of a musical passage. Various empirical research methods are implemented, including grounded theory, multidimensional scaling, and correspondence analysis.
URL: https://pf.fwf.ac.at/project_pdfs/pdf_abstracts/p24336e.pdf

5. **A PERCEPTUAL-BASED ACCENT MODEL IN WESTERN TONAL MUSIC**
Role: team member
Team: Anders Friberg, Erica Bisesi, Anna Rita Addessi, Mario Baroni
Funding: KTH, Stockholm, Sweden; 110,000 €
Institution: KTH, Stockholm, Sweden
Lifetime: 2016 – 2019
Status: concluded
Abstract (quoted from last publication): This article deals with the question of how the perception of the "immanent accents" can be predicted and modeled. By immanent accent we mean any musical event in the score that is related to important points in the musical structure (e.g., tactus positions, melodic peaks) and is therefore able to capture the attention of a listener. Our aim was to investigate the underlying principles of these accented notes by combining quantitative modeling, music analysis and experimental methods. A listening experiment was conducted where 30 participants indicated perceived accented notes for 60 melodies, vocal and instrumental, selected from Baroque, Romantic and Post-tonal styles. This produced a large and unique collection of perceptual data about the perceived immanent accents, organized by styles consisting of vocal and instrumental melodies within Western art music. The music analysis of the indicated accents provided a preliminary list of musical features that could be identified as possible reasons for the raters' perception of the immanent accents. These features related to the score in different ways, e.g., repeated fragments, single notes, or overall structure. A modeling approach was used to quantify the influence of feature groups related to pitch contour, tempo, timing, simple phrasing, and meter. A set of 43

computational features was defined from the music analysis and previous studies and extracted from the score representation. The mean ratings of the participants were predicted using multiple linear regression and support vector regression. The latter method (using cross-validation) obtained the best result of about 66% explained variance ($r = 0.81$) across all melodies and for a selected group of raters. The independent contribution of each feature group was relatively high for pitch contour and timing (9.6 and 7.0%). There were also significant contributions from tempo (4.5%), simple phrasing (4.4%), and meter (3.9%). Interestingly, the independent contribution varied greatly across participants, implying different listener strategies, and also some variability across different styles. The large differences among listeners emphasize the importance of considering the individual listener's perception in future research in music perception.
URL: https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01024/full

6. I PRELUDI PER PIANOFORTE DI OLIVIER MESSIAEN, TRA RIGORE COMPOSITIVO ED ESPRESSIVITÀ [17]

Role: PI
Team: Erica Bisesi, Simonetta Sargenti, Giusy Caruso
Past context: selected by GATM for contributing to the project *Interpretazione e Analisi. Ricerche artistiche sulla collaborazione tra saper analizzare e saper eseguire* [18]
Current context: new frontiers for music performance practice and research by means of motion capture technology
Institutions: GATM, Italy; Conservatory "Guido Cantelli", Novara, Italy; LWT3, Italy, IPEM, Ghent, Belgium
Lifetime: 2017 – present
Status: in progress
Abstract (quoted from last publication): Messiaen Preludes make use of original and clearly identifiable composition techniques: modes of limited composition, non-retrogradable rhythms, rhythms with added values, added notes. At the same time, they are inspired by extramusical content such as nature, birdsong, mathematics, colours, spirituality. Different from previous studies dealing with these aspects separately, and in the spirit of the GATM project "Analysis and Interpretation" (Baroni et al., 2017), whose aim was to bridge the gap between such two domains, we sough for relationships between interpretation and meaning in two different performances of a short excerpt of Prelude No. 3, *Le nombre léger*. Performances, extracted from our previous recordings (Bisesi and Sargenti, 2021), were first analysed by means of techniques of signal processing, and then submitted to 16 musicians and 16 non-musicians for evaluation of semantic predictors obtained from the same previous study. Although dealing with only two pieces, some tendencies could be observed: (i) both groups of

[17] **THE PIANO PRELUDES BY OLIVIER MESSIAEN: COMPOSITIONAL RIGOUR AND EXPRESSIVITY**
[18] Interpretation and Analysis. Artistic research on the collaboration between knowing how to analyze and knowing how to perform

participants associated lower dynamics to the perception of more lightness, as well as less energy, tension, and surprise; (ii) perceived regularity was inversely proportional to articulation; (iii) agogics and dynamics profiles were not associated with perceived movement, but rather with tension and surprise, which are in turn related with roughness and tonal ambiguity. In a future study, we plan to extend the number of performances and apply our methodology to more excerpts, encompassing the entire set of Preludes and, lastly, proposing new ways to model Messiaen style in relation to the *Eight Preludes for piano*.
URL: https://www.atam.cat/articles/29/bridging-the-gap-between-music-analysis-and-performance.html
http://lnx.gatm.it/analiticaojs/index.php/analitica/article/view/144

7. TEACHING AND RESEARCH IN SYSTEMATIC MUSICOLOGY

Role: Teacher and Researcher
Team: Erica Bisesi, Vladimir Zvara, Zuzana Cenkerová
Funding: SAIA Fellowship, National scholarships for university students, PhD students, university teachers, researchers and artists for abroad, Slovakia; 5,000 €
Institution: Comenius University, Bratislava, Slovakia
Lifetime: 2017
Status: concluded
Course and research program: 1) Introduction to Acoustics and Organology; 2) Music structure, expression and emotion; 3) Research activity in music psychology

8. INTERMUSE

Role: Research fellow
Team: Pierre Legrain, Erica Bisesi, Alain Letailleur
Funding: SACEM, France
Institution: Institut Pasteur, Department of Neuroscience
Lifetime: 2018 – present
Status: in progress
Abstract (quoted from last publication): To this day, the study of the substratum of thought and its implied mechanisms is rarely directly addressed. Nowadays, systemic approaches based on introspective methodologies are no longer fashionable and are often overlooked or ignored. Most frequently, reductionist approaches are followed for deciphering the neuronal circuits functionally associated with cognitive processes. However, we argue that systemic studies of individual thought may still contribute to a useful and complementary description of the multimodal nature of perception, because they can take into account individual diversity while still identifying the common features of perceptual processes. We propose to address this question by looking at one possible task for recognition of a "signifying sound", as an example of conceptual grasping of a perceptual response. By adopting a mixed approach combining qualitative analyses of interviews based on introspection with quantitative statistical analyses carried out on the resulting categorization, this study describes a variety of mental strategies used by musicians to identify notes' pitch.

Sixty-seven musicians (music students and professionals) were interviewed, revealing that musicians utilize intermediate steps during note identification by selecting or activating cognitive bricks that help construct and reach the correct decision. We named these elements "mental anchorpoints" (MA). Although the anchorpoints are not universal, and differ between individuals, they can be grouped into categories related to three main sensory modalities – auditory, visual and kinesthetic. Such categorization enabled us to characterize the mental representations (MR) that allow musicians to name notes in relationship to eleven basic typologies of anchorpoints. We propose a conceptual framework which summarizes the process of note identification in five steps, starting from sensory detection and ending with the verbalization of the note pitch, passing through the pivotal role of MAs and MRs. We found that musicians use multiple strategies and select individual combinations of MAs belonging to these three different sensory modalities, both in isolation and in combination.
URL: https://research.pasteur.fr/en/project/intermuse/
https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01480/full

ASTROBIOLOGY, ASTROPARTICLE PHYSICS AND PHYSICS EDUCATION

1. **XTREME RECITAL**

Role: Co-stage director and Performer
Team: Erica Bisesi (organizer, co-stage director, piano, scientist), Michele Maris (organizer, scientist), Nicola Baroni (cello, interactive system), Mauricio Dottori, Marcela Pavia, Massimiliano Messieri, Marco Giommoni (composers), Sara Hennah Galiza (actress), Stavro Ivanovski (co-stage director, actor), Adriano Zibai, Giuseppe Murante (technicians)
Contexts: 1) Science in the City Festival – ESOF2020, Trieste, Italy
Multimedia show supplementary to the XTREME ESOF 2020 exhibition
2) EduINAF
3) Generative Art International Conference and Exhibition, online
Lifetime: 2020 – present
Status: in progress
Abstract: *XTREME RECITAL* is a multimedia show inspired by the *XTREME Life in Extreme Environments* exhibition (ESOF 2020 – Trieste, Aug 29th – Oct 11th, 2020). Our production stems from reasoning about human conditions in the extreme environments of Speleology, Antarctica and Astrobiology, and attempts to answer the question of who we become, visiting a harsh reality where our sins, dreams and senses, are heading to the better part of ourselves. By collecting word and visual documentation, natural sounds and related poetries are exploited to explore the striving emotional impact of life in such extreme condition. In **Speleology**, scientific and historical contents are associated with the four elements of nature: water, air, earth, and fire. Music pieces belonging to the classical repertoire (Grieg, Saint-Saëns, Debussy, Scriabin) and inspired by such elements are combined with excerpts from explorers' diaries (e.g., Dini). In **Antarctica,** the performance consists of four musical miniatures composed by four independent composers, who have been invited to write

original works for piano, cello and electronics which, by means of innovative and compelling techniques, aim at facing with the conflict between Man and Nature and conceptualize, through the music, a possible solution. The harmonies of *Des pas sur la neige* by Debussy is the starting point for suggesting a unifying emotional atmosphere that is set up by the composers through relationships between concrete natural sounds and instrumental human gestures, research on remote perception, and generative algorithmic structuring. Using a minimalistic theatre approach, two actors join the musicians with dialogues inspired by the subject of the exhibition (as extracted from milestone works by Coleridge and Leopardi) and an original choreography. The use of interactive technologies including real-time sound elaborations by means of the Max/MSP programming language finally enhances the amalgam between all performers and the environment made of sounds and gestures, achieving a performance each element of which takes the form of a living dialogue. In **Astrobiology,** currently being planned, we aim at combinig the above-mentioned technologies with a video production whose contents are directly related to a trend research topic on excoplanects and exoclimates.
URL: https://scienceinthecity2020.eu/
https://scienceinthecity2020.eu/en/2020/10/08/xtreme-life-in-extreme-environments/
https://edu.inaf.it/teatro-inaf/abienti-estremi-antartide-speleologia-astrobiologia/
https://www.generativeart.com/
https://www.youtube.com/channel/UCePz_709RK52ljDGc6LnFpw

2. **CONCERTO PER GALASSIE E PIANOFORTE – VIAGGIO DAL BIG BANG ALL'ORIGINE DELLA VITA**
Role: Performer
Team: Erica Bisesi (piano), Massimo Ramella (scientist, populariser, video maker)
Context: Mi&Lab
Lifetime: 2014
Status: concluded
Abstract: "Everything starts with the Universe cooling down and the space leavening permeated by fossil radiation. Fascinating dark matter abounds. A dream scenario becomes more and more real, as the discovery – amazing and fundamental – of the renowed "mode B" polarization of the cosmic background radiation seems to confirm just in these days.
The journey continues through less exotic, but no longer familiar, landscapes. Networks of galaxies weave the large-scale structure of the Universe, and gather in clusters of millions of billions of suns. And it is precisely towards one of these suns, ours, that the journey comes to its end. An average star, with a planet where life could develope. Maybe it came too, like us who are experiencing this journey, from the depths of space.". The multimedia show consists of an original combination of narrative, piano performance and video making based on images taken from updated scientific research.
URL: https://www.miela.it/concerto-per-galassie-e-pianoforte-viaggio-dal-big-bang-allorigine-della-vita/

3. **CLIMATE MODELS WITH BIO-FEEDBACKS FOR APPLICATIONS TO STUDIES OF EXOPLANETS WITHIN THE PROJECT LIFE IN SPACE**
Program name: Life in Space, Prot. ASI N. 2019-3-U.0
Role: Researcher
Team: Giovanni Vladilo, Lorenzo Biasiotti, Erica Bisesi, Marco Fulle, Stavro L . Ivanovski, Michele Maris, Sergio Monai, Giuseppe Murante, Silvano Onofri, Isabella Pagano, Antonello Provenzale, Laura Silva, Paolo M. Simonetti
Funding: ASI, Italy; 36,000
Institution: INAF; Astronomical Observatory of Trieste, Italy
Lifetime: 2019 – present
Status: in progress
Abstract: The aim of the project is to study astrobiology subject matters which can impact on programming of future space missions. Within this framework, the Trieste node is assigned the task to explore surface and atmospheric conditions of rocky exoplanets through the use of climate models. Specifically, the aim is to study the impact of some elementary biological feedbacks by coupling the evolution of vegetation cover with temperature and surface albedo through differential equations. The aim of the research is the selection of potential exoplanets which can produce biomarkers detectable with the next-generation space instruments.

4. **IMPACT OF VEGETATION ON EXOPLANETS' HABITABILITY**
Protocollo IGG-CNR n. 3670 del 29/11/2018 and continuation
Role: team member
Team: Antonello Provenzale, Erica Bisesi, Giuseppe Murante, Matteo Nastasi
Funding: CNR, Pisa; 3,000 €
Institution: IGG, Pisa, Italy; Astronomical Observatory of Trieste, Italy
Lifetime: 2018 – 2019
Status: concluded
Abstract: The climate of a planet is of paramount importance to establish the possible presence of liquid water at its surface, and thus, in a wide sense generally accepted by the scientific community, its habitability. Climate depends on a high number of factors and parameters, both astrophysical (e.g., luminosity of the central star(s), distance of the planet from the star, orbital eccentricity) and planetary (inclination of the rotation axis, duration of the day, atmospheric composition and pressure, presence and fraction of oceans, presence and type of soil, orography, topography, etc.). Some of these parameters have been or will be measured in the near future; data on the others will not be available in short time, and maybe not even in the far future. Therefore simple, although approximate, climate models lend themselves to better serving at parameter space exploration (involving both well-known and unknown parameters) than the more complex Global Circulation Models (GCM), in reason of their much lower computational cost. "Simple" models allow running thousands of experiments at the same computational time of a single GCM's run. A representative example of such a streamlined model is ESTM (Earth-like Surface Temperature Model; Vladilo et al., 2013, 2015). ESTM is based on the numerical solution of a modified diffusion equation for

the meridional heat transfer, coupled with a radiative-convective column atmospheric model to account for the vertical transport of radiation (downward and upward). It has been used for studying a number of characteristics of possible exoplanets candidates (see e.g. Murante et al. 2020, and references therein).

A well-known regulator of a planet's climate is its vegetation cover. Vegetation can modify the planetary surface albedo, being usually darker than the bare surface of the continents (Charney mechanism: Charney 1975; see also Baudena et al., 2008; Aluena et al., 2012, and references therein). Other possible vegetation-climate interactions include "slow" and "fast" carbon cycles – concerning the way in which plants, or more generally biospheres, can hold back and re-emit carbon into the atmosphere, thus changing the carbon dioxide fraction and, as a consequence, the global greenhouse effect. Focusing on the first effect, ESTM can be exploited to investigate the impact of the Charney mechanism on an exoplanet's habitability. ESTM has been recently updated to take into account the evolution of one or more vegetation types. Differential equations describing how changes in temperature, as calculated by ESTM, impact vegetation have been implemented into the model, and corresponding albedo feedback has been included as well (Nastasi, 2020, Graduate Dissertation, Turin University; advisor: A. Provenzale, co-advisor: G. Murante).

My past contribution to this project, supported by a CNR grant awarded at the end of 2018, consisted in a detailed calibration of the response of vegetation to all parameters describing its growth, death, and diffusion. Currently, I am collaborating with Antonello Provenzale, Giuseppe Murante and Matteo Nastasi to apply the newly developed, vegetation-switched-on version of ESTM to study the circumstellar habitable zone and exoplanets' habitability. We are studying how different and competing vegetation types (that resemble deciduous, conifers, grasslands and tundra biotas) may reach equilibrium distribution on a planet depending on its main properties (the most straightforward of these being the insolation, i.e. a combination of stellar luminosity and planet distance from the star). As different equilibrium states correspond to different planetary surface albedo, one can expect that vegetation will extend the planet's circumstellar habitable zone beyond its present external border as a consequence of a decrease in surface albedo. In special cases known as "waterbelt" – e.g., planets almost completely covered by ice, except for a narrow band near the equator – plants could also heat up the planet, thus enlarging the liquid water band and extending the overall habitability fraction.

We plan to submit a paper on this topic in the next months.

Future developments will include: (i) inclusion of the "slow" carbon cycle – that is, the effect on climate of vegetation-sequestered carbon; (ii) study of the "slow" carbonate-silicate cycle (although not unfeasible, achieving this second task looks quite optimistic as it will require a considerable numerical effort, due to the big difference in the time scales between

atmospheric/vegetation and geological dynamics – of years and millions of years, respectively).

5. PROBABILITIES OF EARTH-LIKE EVOLUTION BY EASY AND HARD STEPS

Role: team member
Team: Erica Bisesi, Steno Ferluga, Giuseppe Murante
Institution: INAF; Astronomical Observatory of Trieste, Italy
Lifetime: 2010 –
Status: in progress
Abstract (quoted from last presentations): Traditionally, the rise and evolution of life in the Universe up to intelligence and civilization is accounted for by Drake's equation, which involves three classes of key parameters – astrophysical, planetary and biological. While stellar and planetary factors may be widely constrained by observations, components related to life and civilization suffer a certain degree of arbitrariness. The largely accepted approach for biological development refers to a sequence of more or less probable evolutionary steps. According to Carter (2008), some stages leading to intelligent life would have been extremely improbable ("hard"-step scenario), and their occurrence on the Earth explained trivially by the anthropic principle. An alternative approach refers back to an original idea by Olson (1985), introducing a finer classification of the last evolutionary steps from metazoa up to human beings. By considering different descriptions, in the first stage of this project we aimed at discussing diversification of probabilities associated to simple and complex (multicellular) life, in a multidimensional scenario possibly involving different degrees of "hardness" and dependence on environmental features, like stellar and planetary-related factors.

In a second stage, we developed a computational model combining "hard" and "easy" steps to interpret aspects of biological evolution, and even to probabilistically predict the future duration of Earth habitability. Since we are familiar with the only case of biological evolution on the Earth, our planet is supposed to be representative of biological evolution on planets in any stellar system. There is a wide consensus about the Copernican idea that the Earth, populated by intelligent life, should not be a special case. Expectations for widespread life in the Universe are theoretically supported by the *easy-life scenario*, which considers biological evolution as a sequence of highly probable transitions occurring on habitable planets. On the opposite side, a less popular (yet Copernican) scientific point of view is the *hard-life scenario*, which assumes the Earth to be still a random case of planetary evolution, however with low probability, brought in evidence by the (anthropic) selection effect requiring the presence of observers. The number of critical evolutionary steps considered in the literature (Carter, 2008; Watson, 2008), according to biological and paleontological issues, is generally small (from 5 to 7). A complete conception admits the possibility that the sequence of evolutionary transitions, leading to intelligent life, might include hard *and* soft steps as well. In principle, the correct model should be recognizable on an experimental basis; anyway, the current status of knowledge provides few elements for a decision. The Fermi paradox and the failure in observing traces of life in space, if persisting in future research, may reduce the appeal of the

easy-life idea. On the other side, the hard-life model may be immediately falsified by the detection of fully developed life beyond the Earth; as we will show, this poses a surprising mortgage on the future of the Earth.

The present study proposes a generalized mathematical / computational approach, which treats together (for the first time) both hard and easy evolutionary steps, best according to the current observational knowledge. Our purpose is to study the probability functions for single transitions in a general *hard + easy scenario*, with special attention to the last critical step leading to the emergence of consciousness. Finally, an attempt is made to estimate the probabilities of transitions and expectations for biological evolution – from the appearance of the first living forms to the rise of intelligence, up to the end of planetary habitability.

We are working on the submission of two papers.

As a natural prosecution of this project, we plan to integrate results about biospheres' lifetimes with the concept of Galactic Habitable Zone (GHZ) (Gonzalez et al., 2001; Lineweaver et al., 2004; Spitoni et al., 2017). Here, the idea is to identify which part of the Galaxy may be favourable to the development of complex life. Achieving this task requires us to take account of three factors: (i) likelihood of having a rocky planet, which might depend on the stellar type and metallicity; (ii) likelihood for sterilizing events, for instance explosions of nearby supernovae; (iii) likelihood of being in the presence of a fully-developed biosphere, depending on the age of the planets. While the first two factors are usually estimated using semi-analytical models for the evolution of the Galaxy and its stars, or by means of numerical simulations of disk galaxies similar to the Milky Way, discourse on the third factor is more troublesome. As the only complex biosphere we know is our one, the probability of having a fully-developed biosphere is usually modeled as the cumulative integral of a normal distribution of mean 4 Gyr – which corresponds to the time required by our biosphere to develop (implicitly assuming it is a straightforward outcome), and dispersion 1 Gyr. By combining results of numerical simulations with the probabilistic approach outlined hereby, such an approximate estimate can be, for the first time, significantly improved.

6. INDIRECT SEARCH OF DARK MATTER IN THE HALOS OF GALAXIES. ROLE OF SUBSTRUCTURES ON THE SIGNALS FROM DARK MATTER ANNIHILATION AND PROSPECTS FOR DETECTION OF SINGLE DARK MATTER CLUMPS WITH THE MAGIC TELESCOPE

Role: PhD candidate
Team: Erica Bisesi, Alessandro De Angelis, Massimo Persic, Piero Ullio, The MAGIC Collaboration
Funding: Udine University; INFN
Institution: Udine University, INFN, SISSA
Lifetime: 2003 – 2007
Status: concluded

URL (PhD Thesis): http://www.ericabisesi.com/italiano/scienza/EricaBisesi-TesiPhD.pdf https://magicold.mpp.mpg.de/publications/theses/EBisesi.pdf

7. **EMISSIONE GAMMA DALLE PULSAR. STIMA DEL CONTRIBUTO AL FONDO GAMMA DIFFUSO E POSSIBILI OSSERVAZIONI CON I TELESCOPI SPAZIALI AGILE E GLAST**
   Role: Graduate candidate
   Advisors: Guido Barbiellini Amidei, Luciano Rezzolla
   Funding: INFN
   Institution: Trieste University, SISSA, INFN
   Lifetime: 2001 – 2002
   Status: concluded
   URL (MSc Thesis): http://www.infn.it/thesis/PDF/getfile.php?filename=1575-Bisesi-laurea.pdf

8. **EDUCATIONAL PROPOSALS ON THE CONCEPT OF TIME IN CLASSICAL PHYSICS AND IN SPECIAL AND GENERAL RELATIVITY**
   Role: team member
   Team: Marisa Michelini, Erica Bisesi
   Funding: Udine University, CIRD
   Institution: Udine University, CIRD
   Lifetime: 2007 – 2009
   Status: concluded
   Abstract: Introduction of topics of modern physics in secondary school is one of the highest challenges in physics education. An empirical study was conducted in the context of a Summer School involving both teachers holding a Master in Education and secondary school students trained by the same teachers. By focusing on concepts and terminology in contrast with the common sense and everyday experience, our aim was to highlight conceptual difficulties in the process of learning special relativity. By analysing students' answers to a questionnaire-based survey in terms of selected concepts and their mutual correlations (besides correctness of the answers), we discussed points of strenghts and weakness of two contrasting teaching strategies – based on mathematical induction and logical deduction / intuition, respectively.
   URL:
   https://lekythos.library.ucy.ac.cy/bitstream/handle/10797/14482/C1_Bisesi_COMPARATIVE%20TEACHING%20STRATEGIES_GIREP_2008.pdf?sequence=1&isAllowed=y

Grants/prizes/awards

1. Research grant offered by ASI/INAF/OATS (Italy) for a 1-year research project at the Astronomical Observatory of Trieste, Italy (Feb 2021, 36 k€)

2. National scholarship offered by the SAIA (Slovakia) for a 5-month teaching/research/artistic stay for university teachers, researchers and artists with more than 10 years of experience (Jun 2016, 5 k€)
3. Stand-Alone Project Fellowship (FWF Project P 24336-G21) for a 3.75-year research project at Graz University, Austria, with collaborators Richard Parncutt, Anders Friberg, Petri Toiviainen, Giuseppe Cabras and Jennifer MacRitchie (Dec 2011, 257.43 k€)
4. Lise Meitner Fellowship (FWF Project M 1186-N23) for a 2-year research project at Graz University, Austria, with collaborators Richard Parncutt and Anders Friberg (Oct 2009, 145.04 k€)
5. Scholarship in scientific disciplines offered by the Italian Institute of Culture C. M. Lerici, Stockholm, Sweden, for 3-month research at KTH, Stockholm, with collaborators Roberto Bresin and Anders Friberg (Oct 2006, 41 kSEK)
6. Scholarship on Physics Education for 1.5-month research at Udine University, Italy, with collaborator Marisa Michelini (Nov 2008, 2 k€)
7. Graduate scholarship INFN for 6-month research at SISSA, Trieste, Italy, with collaborator Piero Ullio (Nov 2002, 4.2 k€)
8. Placing in the third position at RENCON 2011 (9th Competition of Music Performance Rendering for Computer Systems) (in collaboration with Anders Friberg and Richard Parncutt)
9. *The 2004 CERN-JINR European School of High-Energy Physics* prize for the best poster presentation (Jun 2004)

Peer-review activity

Journal of New Music Research (2021, 2020, 2017, 2016, 2013); RATM – Rivista di Analisi e Teoria Musicale (2021, 2020); Musurgia (2020), Revue Musicale OICRM (2019); Musique en acte – GREAM (2019); Frontiers in Psychology (2021).

Name and institution of key international cooperation partners (up to date; active collaborations are emphasized in bold)

Armenia: **Mher Navoyan, Tatevik Shakhkulyan (Komitas State Conservatory in Yerevan; Institute of Arts of the National Academy of Sciences of the Republic of Armenia; Komitas-Museum Institute).** *Austria:* Richard Parncutt, Bernd Brabec de Mori, Marlies Bodinger, Andreas Fuchs, Florian Eckl, Sabrina Sattmann (Center for Systematic Musicology, KFU, Graz); Christian Utz, Dieter Kleinrath, Andreas Woyke, Yuko Chiba (Kunstuniversität Graz); Sarah Kettner (Veranstaltungen Musik- und Kunstschule, Leoben). ***Belgium:*** **Giusy Caruso (IPEM – University of Ghent; Royal Conservatory of Anversa).** ***Canada:*** **Sylvain Caron (University of Montreal; OICRM); Caroline Traube (University of Montreal; OICRM; BRAMS); Isabelle Heroux (Université du Québec à Montréal); Fabio Cicoira (Polytechnique Montréal).** *Finland:* Petri Toiviainen (University of Jyväskylä). ***France:*** **Pierre Legrain (Institut Pasteur, Paris); Alain Letailleur (École des hautes études en sciences sociales – EHESS); Moreno Andreatta (CNRS; IRCAM; IRMA, University of Strasbourg); Corentin Guichaoua (IRCAM; IRMA, University of Strasbourg); Nathalie Hérold (GREAM; University of Strasbourg), Xavier Hascher (ACCRA; University of Strasbourg).** *Hungary:* László Stachó (Liszt Music Academy, Budapest; University of Szeged). ***Italy:*** **Giuseppe Murante, Steno Ferluga, Juan**

Vladilo, Massimo Ramella, **Michele Maris, Stavro Ivanovski, Laura Silva, Paolo Simonetti, Sergio Monai (INAF; University of Trieste); Micele Maoret (Scuola di Formazione Scientifica "Luigi Lagrange", Torino); Antonello Provenzale (CNR, Pisa); Mario Baroni (University of Bologna; Fondazione "Istituto Liszt", Bologna); Rossana Dalmonte (Fondazione "Istituto Liszt", Bologna);** Sergio Canazza, Nicola Orio, Antonio Rodà (Department of Information Engineering, University of Padova); **Giuseppe Cabras,** Marisa Michelini **(Department of Mathematics, Computer Science and Physics, University of Udine);** Giovanni Bruno Vicario (Department of Philosophy, University of Udine); Natale Stucchi (Faculty of Psychology, University of Milano Bicocca); Irene Gratton (Faculty and Department of Psychology, University of Trieste; Conservatory of Trieste*)*; **Nicola Baroni (Conservatories of Bologna and Milano; MASK Italia), Simonetta Sargenti (Conservatories of Novara and Pesaro); Antonio Grande (Conservatory of Como);** Alberto Odone (Conservatory of Como); Ennio Francescato (Conservatory of Udine); **Marco Giommoni, Janusz Podrazik (Opusmodus community); Piero Belluco, Samuele Polistina, Giusy Caruso (LWT3, Milano);** Gianluca Di Donato (Istitute "Conservatorio delle Oblate", Avellino; Associazione Mozart Italia); Giorgio Blasco (Trieste Flute Association, previously Conservatory of Trieste); Italo Montiglio (Associazione Seghizzi, Gorizia); Juan Arias Gonano (Associazione Culturale "Lapis", Gorizia); Elena Stolfo (Middle School of Mariano del Friuli); **Sara Hennah Galíza (Accademia Teatrale Veneta, Venezia).** *Portugal:* **José Oliveira Martins (University of Coimbra);** *San Marino:* **Massimiliano Messieri (MASK San Marino).** *Slovakia:* Vladimir Zvara, Zuzana Cenkerova (Comenius University, Bratislava). *Spain:* **José Luis Besada (Universidad Complutense de Madrid).** *Sweden:* **Anders Friberg (Department of Speech, Music and Hearing, KTH, Stockholm).** *Switzerland:* Jennifer MacRitchie (Conservatory of Italian Switzerland, Lugano). *United Kingdom:* Luke Windsor (University of Leeds); **Giusy Caruso (London Performing Academy of Music).**

Qualifications

1. 2007 Feb 23: Doctorate (PhD) in Mathematics and Physics (computational and experimental directions) at Udine University, in collaboration with INFN (Italian Institute of Nuclear Physics), SISSA (International Superior School of Advanced Studies) in Trieste, and Stockholm University (advisor Lars Bergström)
   PhD. Thesis: *Indirect search of dark matter in the halos of galaxies. Role of substructures on the signals from dark matter annihilation and prospects for detection of single dark matter clumps with the MAGIC Telescope*
   Advisors: Alessandro De Angelis and Massimo Persic
2. 2002 May 30: Master (MSc) in Elementary Particle Physics at Trieste University, in collaboration with INFN, SISSA, Trieste, and CNR (Italian National Council of Research), Milan
   Master Thesis: *Emissione gamma dalle pulsar. Stima del contributo al fondo gamma diffuso e possibili osservazioni con i telescopi spaziali AGILE e GLAST* [19]
   Additional dissertations for graduation defence: (1) *Analisi dell'attività sismica ai fini conoscitivi e previsionali dell'attività eruttiva: Il caso dello Stromboli;* [20] (2) *Il principio di causalità. Determinismo classico, indeterminismo quantistico e caos deterministico* [21]

[19] EN: *Gamma-ray emission from pulsars. Estimation of the contribution of pulsars to the gamma-ray background and possible observations with the space telescopes AGILE and GLAST*

Advisors: Guido Barbiellini Amidei and Luciano Rezzolla
Grade: 102/110

3. Oct 2001 – Jun 2003: Music and New Technologies Undergraduate School, Trieste Conservatory
   Topics: acoustics, psychoacoustics, music perception, electroacoustics, signal processing, history, analysis, composition and performance of electroacoustics music, history of 20th century music
   Not completed
4. 1996 Oct 22: MA in Piano Performance at Trieste (Italy) at Trieste Music Conservatory
   Advisor: Roberto Repini
   Grade: 8.25/10

Graduate Schools:

1. *Statistical Methods for Behavioural Science,* KTH-Stockholm, Sweden, Summer Semester 2017
2. *Summer School in Sound and Music Computing,* KTH-Stockholm, Sweden, 2-6 Jul 2007
   Topics: neurosciences and music, mobile music and locative audio technology, sound and music computing in Europe, presentations and discussions with experts in the industrial sector, mini-project "CLOSED"
3. *International Advanced Course on Musical Acoustics,* Bologna University, Italy, 18-22 Jul 2005
   Topics: fundamentals of acoustics and wind instruments, vibration and fundamental of modal analysis and percussion instruments, string instruments, restoration and conservation of musical instruments, sound synthesis and physical methods applied to musical instruments, room acoustics and advanced experiments
4. The 2004 *CERN-JINR European School of High-Energy Physics,* Sant Feliu de Guíxols, Barcelona, Spain, 30 May – 12 Jun 2004
5. *Summer School NOVICOSMO 200*5, Novigrad, Croatia, 5-17 Sep 2005
6. Jul 2005: visiting student at Max Planck Institut für Physik – Werner Heisenberg Institut, München, Germany
7. Jan 2006 – Mar 2006: *Graduate School of Cosmology, Particle Astrophysics and Strings,* Stockholm University Fysikum, Sweden

Participation in Piano Master Classes (selection):

1. *Piano perfecting* at Graz, Austria, 2012-2014 (Advisor: Andreas Woyke, DE)
2. *Piano perfecting* in Rovereto, Italy, 2006-2007 (Advisor: Anna Kravtchenko, UA)
3. *Advanced Course in Piano Perfecting*, Marziali Academy, Seveso, Italy, 2005-2006 (Advisor: Bruno Canino, IT)
4. *International Piano Master Class,* Ernen, Switzerland, 22-27 Aug 2005 (Advisor: Bruno Canino, IT)
5. *Piano Masterclasses, Amici della Musica di Firenze,* Italy, 5-8 Jun 2005 and 6-10 Dec 2003 (Advisor: Bruno Canino, IT)

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[20] EN: *Analysis of seismic activity for the purpose of knowledging and forecasting eruptive activity: The case of Stromboli*
[21] EN: *The principle of causality. Classical determinism, quantum indeterminism and deterministic chaos*

6. *Music Academy,* Zagreb, Croatia, 2001-2003 (Advisor: Vladimir Krpan, HR)
7. *EPTA International Piano Summer School*, Dubrovnik, Croatia, 23 Jul – 13 Aug 2002 (Advisor: Pavica Gvozdič, HR)
8. *Studying music interpretation and the repertoire for piano and orchestra,* Latisana, Italy, 2001-2005 (Advisor: Francesco Mander, IT)
9. *Post-Diploma Course in Piano Interpretation,* Mednarodni center za glasbo in umetnost [22], Gorizia, Italy, Oct - Dec 2000 (Advisor: Sijavuš Gadjev, RU)
10. *School of High Perfecting in Piano Performance,* Il Trillo, Firenze, Italy, 2003-2004 (Advisor: Aquiles Delle Vigne, AR)
11. *Internationale Sommerakademie Mozarteum,* Salzburg, Austria, 19-31 Jul 1999 (Advisor: Aquiles Delle Vigne, AR)
12. *Biennial Course of Piano Performance,* Musici Artis, Roma, Italy, 1998-2000 (Advisor: Aquiles Delle Vigne, AR)

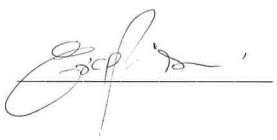
Computing

Platforms: Windows, Unix, OsX and MacOS, Linux, iOS, Android
Common use: Microsoft Office (Word, Excel, Powerpoint, Publisher), Internet (HTML, Dreamweaver)
Programming: Idl, Fortran 77, Matlab, Python, R
Audio Technology: MIR and MIDI Toolbox, Sonic Visualizer, Raven, Pd (basics), Csound, Audacity, Cooledit, Wavelab, Cubase, Musescore, Finale
Computational Music Analysis: Humdrum, AthenaCL, Acousmographe, EAnalysis & iAnalyse
Video Technology: Vegas, iMovie, Windows Movie Maker
Graphics: Qtiplot, Matplotlib, Paw, Gimp
Experimental control programs for psychology: Psychopy, Presentation (basics)
Statistical Analysis and Machine Learning: SPSS, Statistica, Xlstat, R, Python
Qualitative analysis: Maxqda, QDA Miner, WordStat, Rqda
Text Processing: Latex

Languages

Native speaker: Italian
Fluent: English, French, Spanish
Intermediate: German
Basics: Swedish, Portuguese

(updated on 12.5.2021)



[22] EN: International Center for Music and Art

PUBLICATION LIST

Open access to publications (when available, updated at 2019) at:

http://www.ericabisesi.com/english/science/publications.htm
(password for protected files: valkiria12)

https://www.kth.se/profile/bisesi

* Peer-reviewed journal articles / proceedings and book chapters are marked with a single asterisk.

** Proceedings contributions based on peer-reviewed abstracts are marked with a double asterisk.

5 MOST RELEVANT PUBLICATIONS

1. Bisesi, E., Friberg, A., & Parncutt, R. (2019). A computational model of immanent accent salience in tonal music. *Frontiers in Psychology – Performance Science, 10 (317).* DOI: 10.3389/fpsyg.2019.00317 * (cited by 2) [23]

2. Letailleur, A., Bisesi, E., & Legrain, P. (2020). Strategies used by musicians to identify notes' pitch: Cognitive bricks and mental representations. *Frontiers in Psychology – Auditive Cognitive Neuroscience, 11 (1480).* DOI: 10.3389/fpsyg.2020.01480 * (cited by 1)

3. Friberg, A., Bisesi, E., Addessi, A.R., & Baroni, M. (2019). Probing the underlying principles of perceived immanent accents using a modeling approach. *Frontiers in Psychology – Performance Science, 10 (1024).* DOI: 10.3389/fpsyg.2019.01024 *

4. J. Albert et al. (158 authors including E. Bisesi) (2006). Variable very high energy gamma-ray emission from the Microquasar LS I+61 303. *Science, 312 (5781),* 1771-1773. DOI: 10.1126/science.1128177 (cited by 368) *

5. Bisesi, E. (2007). The impact of subhalos on the signals from dark matter annihilations. *Astrophysics and Space Science, 309 (1-4),* 517-522. DOI: 10.1007/s10509-007-9405-z *

PEER REVIEW ARTICLES

Music Psychology

Music Cognition

1. Letailleur, A., Bisesi, E., & Legrain, P. (2020). Strategies used by musicians to identify notes' pitch: Cognitive bricks and mental representations. *Frontiers in Psychology – Auditive Cognitive Neuroscience, 11 (1480).* DOI: 10.3389/fpsyg.2020.01480 * (cited by1)

Psychology of Expressive Performance

2. Friberg, A., Bisesi, E., Addessi, A.R., & Baroni, M. (2019). Probing the underlying principles of perceived immanent accents using a modeling approach. *Frontiers in Psychology – Performance Science, 10 (1024).* DOI: 10.3389/fpsyg.2019.01024 *

[23] Based on the SCOPUS database, updated on February 8th 2021.

3. Bisesi, E., Friberg, A., & Parncutt, R. (2019). A computational model of immanent accent salience in tonal music. *Frontiers in Psychology – Performance Science, 10 (317).* DOI: 10.3389/fpsyg.2019.00317 * (cited by 2)

4. Bisesi, E. & Parncutt, R. (2011). An accent-bed approach to automatic rendering of piano performance: Preliminary auditory evaluation. *Archives of Acoustics, 36 (2),* 283-296. DOI: 10.2478/v10168-011-0022-z (cited by 8) *

Psychology of Musical Tempo

5. Bisesi, E. & Vicario, G.B. (2009). Factors affecting the choice of performed tempo. *British Postgraduate Musicology, 10* *

Music Analysis

6. Guichaoua, C., Besada, J.L., Bisesi, E., & Andreatta, M. (2021). The Tonnetz environment: A web platform for computer-aided "mathemusical" learning and research". In B. Csapó & J. Uhomoibhi (Eds.), *Proceedings of CSEDU-2021*, *Vol. 1,* online, 23-25 Apr 2021 (pp. 680-689). Setúbal: Scitpress. DOI: 10.5220/0010532606800689 *

7. Bisesi, E. & Sargenti, S. (2021). *I preludi per pianoforte di Olivier Messiaen, tra rigore compositivo ed espressività. Analitica, 12/2019*, 1-66. *

Fundamental Physics

8. Bisesi, E. (2007). The impact of subhalos on the signals from dark matter annihilations. *Astrophysics and Space Science, 309 (1-4),* 517-522. DOI: 10.1007/s10509-007-9405-z *

Experimental Physics

9. D. Bastieri et al. (16 authors including E. Bisesi) (2005). Using the photons from the Crab nebula seen by GLAST to calibrate MAGIC and the imaging air Cerenkov telescopes. *Astroparticle Physics, 23 (6),* 572-576. DOI: 10.1016/j.astropartphys.2005.05.002 (cited by 15) *

10. M. Brigida et al. (27 authors including E. Bisesi) (2006). Particle identification with the Silicon Transition Radiation Detector (SiTRD): State of art and future perspectives. *Nuclear Instruments and Methods in Physics Research Section A, 563 (2),* 388-391. DOI: 10.1016/j.nima.2006.02.155 * (cited by 1)

11. A. Albano et al. (40 authors including E. Bisesi) (2004). Scientific motivations and technical proposal for a stereoscopic MAGIC telescope (MAGIC II) in La Palma. *MAGIC Internal document*

MAGIC collaboration publications

12. J. Albert et al. (158 authors including E. Bisesi) (2006). Variable very high energy gamma-ray emission from the Microquasar LS I+61 303. *Science, 312 (5781),* 1771-1773. DOI: 10.1126/science.1128177 (cited by 368) *

13. J. Albert et al. (142 authors including E. Bisesi) (2006). Discovery of very high energy gamma-rays from Markarian 180 triggered by an optical outburst. *The Astrophysical Journal Letters, 648 (2)*, L105-L108. DOI: https://doi.org/10.1086/508020 (cited by 94) *

14. J. Albert et al. (147 authors including E. Bisesi) (2006). Observation of VHE Gamma Radiation from HESS J1834-087/W41 with the MAGIC Telescope. *The Astrophysical Journal, 643 (1),* L53-L56. DOI: https://doi.org/10.1086/504917 (cited by 53) *

15. J. Albert et al. (132 authors including E. Bisesi) (2006). Discovery of very high energy gamma rays from 1ES 1218+30.4. *The Astrophysical Journal, 642 (2),* L119-L122. DOI: https://doi.org/10.1086/504845 (cited by 104) *

16. J. Albert et al. (130 authors including E. Bisesi) (2006). Flux upper limit of gamma-ray emission by grb050713a from magic telescope observations. *The Astrophysical Journal, 641 (1),* L9-L12. DOI: https://doi.org/10.1086/503767 (cited by 52) *

17. J. Albert et al. (131 authors including E. Bisesi) (2006). Observation of gamma-rays from the Galactic Center with the Magic Telescope. *The Astrophysical Journal, 638 (2),* L101-L104. DOI: https://doi.org/10.1086/501164 (cited by 164) *

18. J. Albert et al. (134 authors including E. Bisesi) (2006). Magic observations of very high energy gamma-rays from HESS J1813-178. *The Astrophysical Journal, 637 (1),* L41-L44. DOI: https://doi.org/10.1086/500364 (cited by 39) *

19. J. Albert et al. (129 authors including E. Bisesi) (2006). Observation of VHE gamma-ray emission from the active galactic nucleus 1ES-1959+650 using the Magic Telescope. *The Astrophysical Journal, 639 (2),* 761-765. DOI: https://doi.org/10.1086/499421 (cited by 63) *

20. J. Albert i Fort et al. (103 authors including E. Bisesi) (2006). Physics and astrophysics with a ground-based gamma-ray telescope of low energy threshold. *Astroparticle Physics, 23 (5),* 493-509. DOI: https://doi.org/10.1016/j.astropartphys.2005.03.005 (cited by 11) *

BOOK CONTRIBUTIONS

Music Performance

21. Bisesi, E. & Windsor, W. L. (2016). Expression and communication of structure in music performance: Measurements and models. In S. Hallam, I. Cross, and M. Thaut (Eds.), *Oxford Handbook of Music Psychology, 2nd Edition* (pp. 615-631). Oxford: Oxford University Press. DOI: 10.1093/oxfordhb/9780198722946.013.37 *

22. Friberg, A. & Bisesi, E. (2014). Using computational models of music performance to model stylistic variations. In D. Fabian, E. Schubert, and R. Timmers (Eds.), *Expressiveness in music performance: Empirical approaches across styles and cultures* (pp. 240-259). Oxford: Oxford University Press. DOI: http://dx.doi.org/10.1093/acprof:oso/9780199659647.003.0014 *

Music Analysis and Performance

23. Caron, S., Bisesi, E., & Traube, C. (2019). Analyser l'interprétation : Une étude comparative des variations de tempo dans le premier prélude de l'*Art de toucher le clavecin* de François Couperin. In P. Lalitte (Ed.), *Musique et Cognition. Perspectives pour l'analyse et la performance musicales*. Dijon: Éditions Universitaires de Dijon (pp. 233-266). ISBN : 978-2-36441-336-8 *

Music Psychology

Psychology of Musical Tempo

24. Bisesi, E. & Caron, S. (2021, in press). De quoi dépend-il la perception d'un tempo optimal dans la musique ? Le rôle de la structure musicale. In S. Féron, C. Abromont, and P. Lalitte (Eds.), *Le tempo dans l'acte de performance*. Paris, Editions du Conservatoire Supérieur de Musique et de Danse de Paris. *

25. Bisesi, E. & Vicario, G. B. (2015). The perception of an optimal tempo. The role of melodic event density. In A. Galmonte and R. Actis-Grosso (Eds.), *Different psychological perspectives on cognitive processes: Current research trends in Alps-Adria region* (pp. 25-43). Cambridge: Cambridge Scholars Publishing. ISBN: 978-1-4438-5628-7 *

Ethnomusicology

26. Shakhkulyan, T., Bisesi, E. & Parncutt, R. (2017). David of Sassoun: The tonal structure of Armenian epic songs. In T. Shakhkulyan (Ed.), *Komitas and traditional music culture – Yearbook of Komitas Museum-Institute, Vol. 2*. Yerevan: Publications of Komitas Museum-Institute. ISBN: 978–9939–9134–5–2

Education

Music Education

27. Bisesi, E. & Francescato, E. (2012). Applicazioni didattiche della ricerca scientifica sull'esecuzione musicale. In C. Guetti (Ed.), *A.A.V.V. La musica in testa.* Milano-Udine, Mimesis Edizioni. ISBN: 9788857509266 8857509265

Physics Education

28. Bisesi, E. & Michelini, M. (2010). Comparative teaching strategies in special relativity. In C. P. Constantinou and N. Papadouris (Eds.), *Physics Curriculum Design, Development and Validation*. Cyprus: Learning in Science Group. CD-ROM, ISBN: 978-9963-689-21-7 *

Dissemination

29. Bisesi, E. (2012). The Alien | L'alieno. In A. Bianco (Ed.), *Otherness | Alterità* (pp. 57-66). Roma: Aracne. ISBN 978-88-548-5210-5

OTHER PUBLICATIONS

Generative Art

30. Bisesi, E., Baroni, N., Maris, M., Ivanovski, S. L., & Hennah Galiza, S. (2020). XTREME Recital. In C. Soddu and E. Colabella (Eds.), *Proceedings of the XXIII GA Conference,* Milano (online), 15-17 Dec 2020 (pp. 407-416). Roma: Domus Argenia Publisher. ISBN 978-88-96610-42-8 **

Music Analysis

31. Sargenti, S., & Bisesi, E. (2020). Bridging the gap between music analysis and performance: A study on Messiaen *Prélude "Le nombre léger"*. In J. Margarit Dalmau et al. (Eds.), *Proceedings of the Workshop Análisis & Interpretación*, Barcelona, Spain, 28-29 Feb 2020. **

32. Bisesi, E. (2017). Measuring and modelling perceived distance among collections in post-tonal music: Music theory meets music psychology. In N. Hérold, M. Andreatta, A.-S. Barthel, J.-M. Chouvel, P. Couprie, C. Felici, and X. Hascher (Eds.), *Proceedings of EUROMAC9*, Strasbourg, France, 28 Jun – 1 Jul 2017 **

Music Psychology

Psychology of Expressive Performance

33. Bisesi, E., & Toiviainen, P. (2017). The relationship between musical structure and emotion in classical piano scores: A pilot study on the Theme of *La Folia*. In E. Van Dyck (Ed.), *Proceedings of ESCOM 2017*, Ghent, Belgium, 31 Jul – 4 Aug 2017 (pp. 18-22). Ghent: IPEM **

34. Bisesi, E., Parncutt, R., Caron, S., & Traube, C. (2014). The immanent emotion of a musical score: An exploratory study. In M. K. Song (Ed.), *Proceedings of the ICMPC13 – APSCOM-5*, Seoul, South Korea, 4-8 Aug 2014 (pp. 124-126). Seoul, South Korea: College of Music, Yonsei University **

35. Bodinger, M., Bisesi, E., & Parncutt, R. (2014). Listeners' informal vocabulary for structure, expression, emotions and associations in piano music. In M. K. Song (Ed.), *Proceedings of the ICMPC13 – APSCOM-5*, Seoul, South Korea, 4-8 Aug 2014 (pp. 76-79). Seoul, South Korea: College of Music, Yonsei University **

36. Eckl, F. J., Bisesi, E., Friberg, A., & Parncutt, R. (2014). A computational model of immanent accent salience in tonal music: Perceptual evaluation. In M. K. Song (Ed.), *Proceedings of the ICMPC13 – APSCOM-5*, Seoul, South Korea, 4-8 Aug 2014 (pp. 248-250). Seoul, South Korea: College of Music, Yonsei University **

37. Bisesi, E., MacRitchie, J., & Parncutt, R. (2013). Structural communication in piano duos: Musical compatibility and individual differences in interpretation. In A. Williamon and W. Goebl (Eds), *Proceedings of the International Symposium on Performance Science,* Vienna, Austria, 28-31 Aug 2013 (pp. 263-268). Brussels, Belgium: European Association of Conservatoires (AEC). ISBN: 978-2-9601378-0-4 **

38. Parncutt, R., Bisesi, E., & Friberg, A. (2013). A preliminary computational model of immanent accent salience in tonal music. In R. Bresin (Ed.), *Proceedings of Sound and Music Computing Conference SMAC – SMC 2013*, Stockholm, Sweden, 30 Jul – 3 Aug 2013 (pp. 335-340). Stockholm: KTH. ISBN: 978-91-7501-831-7 **

39. Bisesi, E., Eckl, F. J., & Parncutt, R. (2013). What emotions and free associations characterize different musical styles? In G. Luck and O. Brabant (Eds.), *Proceedings of the 3rd International Conference on Music and Emotion*, Jyväskylä, Finland, 11-15 Jun 2013. Jyväskylä, Finland: University of Jyväskylä, Department of Music. ISBN 978-951-39-5250-1 **

40. Bisesi, E., MacRitchie, J., & Parncutt, R. (2012). Recorded interpretations of Chopin Preludes: Performer's choice of score events for emphasis and emotional communication. In E. Cambouropoulol, C. Tsougras, P. Mavromatis, and C. Pastiadis (Eds.), *Proceedings of ICMPC – ESCOM 2012,* Thessaloniki, Greece, 23-28 Jul 2012 (pp. 106-107). ISBN: 978-960-99845-1-5 **

41. Bisesi, E., Friberg, A., & Parncutt, R. (2011). Director Musices (accent-based formulation). In *Proceedings of Rencon 2011*, Padova, 6 Jul 2011

42. Bisesi, E., Parncutt, R., & Friberg, A. (2011). An accent-based approach to performance rendering: Music theory meets music psychology. In A. Williamon, D. Edwards, and L. Bartel (Eds.) *Proceedings of the International Symposium on Performance Science,* Toronto, Canada, 24-27 Aug 2011 (pp. 27-32). ISBN 978-94-90306-02-1 **

43. Bisesi, E. & Parncutt, R. (2010). An accent-based approach to automatic rendering of piano performance. In W. Goebl (Ed.), *Proceedings of the Second Vienna Talk on Music Acoustics*, Vienna, 19-21 Sep 2010 (pp. 26-30). ISBN: 978-3-900914-07-3 **

Psychology of Musical Tempo

44. Bisesi, E. & Vicario, G. B. (2009). Psychoacoustical aspects of the speed of melody performance. In M. M. Marin, M. Knoche, and R. Parncutt (Eds.)*, Proceedings of the first*

International Conference of Students of Systematic Musicology (SysMus08), Graz, Austria, 14-15 Nov 2008 (pp. 7-11). CD-ROM, ISBN: 978-3-9502656-2-0, Internet ISBN: 978-3-9502656-3-7 **

Ethnomusicology

45. Bisesi, E. & Brabec de Mori, B. (2010). The representation of time among different cultures and musical systems. In R. Parncutt and M. Koegeler (Eds.), *Proceedings of cAIR10, the first Conference on Applied Interculturality Research*, Graz, Austria, 7-10 Apr 2010 **

Education

Music Education

46. Bisesi, E. & Michelini, M. (submitted in 2010). Planning curricular proposals on sound and music with perspective secondary-school teachers, arXiv:0808.3695 **

Astrobiology

47. Ivanovski, S.L., Biasiotti, L. Bisesi, E., Maris, M., Murante, G., Silva, L., Fulle, M., Monai. S., Simonetti, P.M., & Vladilo, G. (2021). Steps towards atmospheric and MHD modelling of habitable exoplanets. Mem. S.*A.It., 75,* 282-285.

Fundamental Physics

48. Bisesi, E. (2007). Indirect search of dark matter in the halos of galaxies. Role of substructures on the signals from dark matter annihilation and prospects for detection of single dark matter clumps with the MAGIC Telescope. *PhD Thesis. Magic Publications*

49. Bisesi, E. (2002). Emissione gamma dalle pulsar. Stima del contributo al fondo gamma diffuso e possibili osservazioni con i telescopi spaziali AGILE e GLAST. *MSc Thesis.* In: *Tesi di Laurea e di Dottorato INFN*

Conference proceedings in fundamental physics

50. Bisesi, E., Mariotti, M., & Scalzotto, V. (2006). Dark matter detection in gamma astroparticle experiments. In G. Sidharth, F. Honsell, and A. De Angelis (Eds.), *Proceedings of 6th International Symposium on Frontiers of Fundamental Physics (FFP6),* Udine, Italy, 26-29 Sep 2004 (pp. 315-320). Dordrecht, The Netherlands: Springer. ISBN 978-1-4020-4339-0 **

51. Bisesi, E. (2006). Contribution of pulsars to the gamma-ray background and their observation with the space telescopes GLAST and AGILE. In G. Sidharth, F. Honsell, and A. De Angelis (Eds.), *Proceedings of 6th International Symposium on Frontiers of Fundamental Physics (FFP6),* Udine, Italy, 26-29 Sep 2004 (pp. 321-326). Dordrecht, The Netherlands: Springer. ISBN 978-1-4020-4339-0 **

52. D. Bastieri et al. (18 authors including E. Bisesi) (2006). The MAGIC experiment and its first results. In G. Sidharth, F. Honsell, and A. De Angelis (Eds.), *Proceedings of 6th International Symposium on Frontiers of Fundamental Physics (FFP6),* Udine, Italy, 26-29 Sep 2004 (pp. 291-296). Dordrecht, The Netherlands: Springer. ISBN 978-1-4020-4339-0 **

53. Bisesi, E. (2006). Populations of subhalos in Cold Dark Matter halos. In A. De Angelis and O. Mansutti (Eds.), *Proceedings of the Third Workshop on Science with the New Generation of High Energy Gamma-Ray Experiments,* Cividale del Friuli (Italy), 30 May – 1 Jun 2005 (pp. 125-134). Singapore: World Scientific Publishing Co. Pte. Ltd. DOI: https://doi.org/10.1142/6114 (cited by 1) **

54. Bartko, H., Biland, A., Bisesi, E., Elsässer, D., Flix, J., Häfliger, P., Mariotti, M., Stark, S., & Wittek, W. (2005). Towards dark matter searches with the MAGIC telescope. In B. Sripathi

Acharya, S. Gupta, P. Jagadeesan, A. Jain, S. Karthikeyan, S. Morris, and S. Tonwar (Eds.), *Proceedings of the 29th International Cosmic Ray Conferernce (ICRC 2005),* Pune, India, 3 – 10 Aug 2005 (Vol. 4, pp. 17-20). Mumbai: Tata Institute of Fundamental Research **

55. Bartko, H., Biland, A., Bisesi, E., Commichau, S., Flix, P., Lorenz, E., Mariotti, M., Mirzoyan, R., Scalzotto, V., Stark, S., & Wittek, W. (2005). Search for gamma rays from the Galactic Center with the MAGIC telescope. In B. Sripathi Acharya, S. Gupta, P. Jagadeesan, A. Jain, S. Karthikeyan, S. Morris, and S. Tonwar (Eds.), *Proceedings of the 29th International Cosmic Ray Conferernce (ICRC 2005)*, Pune, India, 3 – 10 Aug 2005 (Vol. 4, pp. 113-116). Mumbai: Tata Institute of Fundamental Research (cited by 1) **

PUBLICATIONS IN PREPARATION (PEER-REVIEW)

1. Bisesi, E. (under review). *Franz Liszt Sonetto 104 del Petrarca: Analysis and interpretation in the light of the relationship between music and text.* Quaderni dell'Istituto Liszt
2. Caron, S., & Bisesi, E. (under review). *Les Folies françoises de François Couperin et l'expression musicale.* Musurgia
3. Bisesi, E., Caron, S., & Murante, G. *Modeling the relationship between structure and meaning in "Les Dominos" by François Couperin by means of a machine learning approach*
4. Bisesi, E., Cabras, G., et al. *Measuring expressive piano performance by means of a Constant-Q transform-based method*
5. Bisesi, E., Murante, G., & Provenzale, A. *Impact of vegetation on the climate of Earth-like exoplanets*
6. Ferluga, S., & Bisesi, E. (under submission). *Probability of Earth-like evolution: A general step-by-step model*
7. Murante, G. et al. (under submission). *Habitable worlds.* Astrobiology, Special Issue.

INVITED CONFERENCE/EVENT PRESENTATIONS

- Forthcoming: M. Pavia, N. Baroni, E. Bisesi, & F. Ciabattoni (2021), Rondo Smart Festival – Omaggio a Dante e Calvino: *Poi piovve dentro e l'alta fantasia* (Fabbrica del Vapore, Milano, Italy, Fall 2021; Lecture-Recital (LR))
- Forthcoming: E. Bisesi, M. Maris, N. Baroni, M. Dottori, M. Giommoni, M. Messieri, M. Pavia, S. Ivanovski, & S. Hennah Galiza (2021), *Xtreme Recital* (rescheduling of "Science in the City Festival, ESOF 2020", Casa della Musica, Trieste, Italy, Fall 2021, postponed due to the pandemic; multimedia show (MS))
- E. Bisesi & S. Ferluga (2021, forthcoming). *Conversazioni di astrobiologia – Parte 1: Evoluzione della vita su altri mondi* (Centro Studi Astronomici "Antares", Trieste (online), Italy, 29 May 2021; spoken presentation (SP)
- E. Bisesi & G. Murante (2021, forthcoming). *Conversazioni di astrobiologia – Parte 2: Relazione tra clima ed abitabilità* (Centro Studi Astronomici "Antares", Trieste (online), Italy, 26 Jun 2021; spoken presentation (SP)
- E. Bisesi, G. Murante et al. (2021, forthcoming). *Conversazioni di astrobiologia – Parte 3: Marcatori biologici* (Centro Studi Astronomici "Antares", Trieste (online), Italy, Fall 2021; spoken presentation (SP)
- E. Bisesi (2020). *Colmare il divario tra musicologia storica e musicologia sistematica* ("Humanitas" – 55º Incontro Culturale Mitteleuropeo, Gorizia (online), Italy, 12-14 Nov 2020; SP)
- E. Bisesi & S. Caron (2018). *Recherches sur la perception du tempo* (Journée d'étude – Performance Studies, Observatoire Interdisciplinaire de création et de recherche en musique – OICRM, Université de Montréal, Canada, 23 Mar 2018; SP)
- E. Bisesi (2017). *La perception du tempo optimal dans la musique* (« Le tempo dans l'acte de performance », MSH Dijon, Université de Bourgogne, France, 30-31 Mar 2017; SP)

- E. Bisesi & S. Caron (2017). *Partition, interprétation et perception du tempo* (« Le tempo dans l'acte de performance », MSH Dijon, Université de Bourgogne, France, 30-31 Mar 2017; SP)
- E. Bisesi (2016). *Intuition in der Musikwissenschaft* ("Intuition und Wissenschaft", Grazer Universitätsmuseen, Austria, 10-11 Nov 2016; SP)
- E. Bisesi (2015). *Relazione tra struttura musicale ed emozioni lungo il percorso tonale da Schubert a Wagner, ultimo Liszt e primo Schoenberg* ("Le emozioni e la percezione sensoriale", Università Popolare di Gorizia, Italy, 25-27 Sep 2015; LR)
- E. Bisesi (2015). *Il percorso tonale da Schubert a Schoenberg: Un'analisi psicologica assistita dal computer* ("Quadrivium: La musica all'incrocio dei saperi, XI Edition", Conservatory of Como, Italy, 3 Mar 2015; LR)
- E. Bisesi (2014). *The tonal trajectory connecting Schubert, Wagner, Liszt and Schoenberg: A psychological, computer-based analysis* ("2nd International Music Week", Ljubljana Music Academy, Slovenia, 17-24 Nov 2014; LR)
- E. Bisesi & M. Ramella (2014), *Concerto per galassie e pianoforte* ("Mi&Lab", Teatro Miela, Trieste, Italy, 6 Nov 2014; MS)
- E. Bisesi (2009). *Il tempo e la sua misura* ("Convegno delle Giornate di Diffusione della Cultura", Udine University, Italy, 17 Mar 2009; SP)
- E. Francescato & E. Bisesi (2009). *Ricerche scientifiche sull'esecuzione musicale e relative applicazioni didattiche* ("La Musica in testa. Tre giorni di scienza, musica e apprendimento", Sissa, Trieste, Italy, 13-15 Jan 2009; SP)
- E. Bisesi (2008). *Musica, Ricerca ed Educazione* ("XVIII Edizione delle giornate di diffusione della Cultura – Convegno in memoria di Paolo Bozzi", Udine University, Italy, 25 Feb 2008; LR)
- E. Bisesi (2007). *Science & Art Entanglement* ("Tribuna di Galileo", Museo di Storia Naturale – Sezione di Zoologia, Firenze, Italy, 22 Nov 2007; SP)
- G. B. Vicario & E. Bisesi (2007). *Rapporto tra musica ed emozioni* ("XVII Edizione delle giornate di diffusione della Cultura", Udine University, Italy, 27 Mar 2007; SP)

PARTICIPATION IN INTERNATIONAL CONFERENCES

- ICSC 2021 (8th International Conference on Spatial Cognition, Rome & online, Italy, 13-17 Sep 2021, forthcoming; Symposium "Conceptualizing musical features through spatial cognition")
    - Talk 1: M. Andreatta, E. Bisesi, C. Guichaoua, & J.L. Besada, *Conceptualizing chord relationships via spatial visualization within the Tonnetz*
    - Talk 2: P. Legrain, A. Letailleur, & E. Bisesi. *Spatial mental anchorpoints during identification of notes' pitch by musicians*
    - Talk 3: E. Bisesi, *Modeling perceived distance among music collections: A machine-learning approach*
- EUROMAC10 (X European Music Analysis Conference, Moscow & online, Russia, 20-25 Sep 2021, forthcoming)
    - Talk: E. Bisesi, D. Fadda, S. Sargenti, & M. Baroni, *Mussorgsky Pictures at an Exhibition: A computer-driven semiotic interpretation*
- EPSC2021 2021 (Europlanet Science Congress 2021, online, 13-24 Sep 2021, forthcoming)
    - Talk: P. Simonetti, L. Biasiotti, E. Bisesi, M. Fulle, S.L. Ivanovski, M. Maris, S. Monai, G. Murante, L. Silva, & G. Vladilo, *Terrestrial-type planetary atmospheres with HELIOS*
- CSEDU 2021 (13th International Conference on Computer Supported Education, Setúbal & online, Portugal, 23-25 Apr 2021)

    - Talk: C. Guichaoua, J.L. Besada, E. Bisesi, & M. Andreatta, *The Tonnetz environment: A web platform for computer-aided "mathemusical" learning and research*
- XXIII Generative Art Conference, Milano (online), Italy, 15-17 Dec 2020
    - Performance, Exhibition and Talk: N. Baroni, E. Bisesi, M. Maris, S. L. Ivanovski, & S. Hennah Galiza, *XTREME Recital.*
- XVII Convegno di Analisi e Teoria Musicale, Italy (online), 26-29 Nov 2020
    - Talk: E. Bisesi, *Modellizzazione computazionale della distanza percepita tra collezioni di altezze*
- EGU2020 General Assembly, Vienna (online), Austria, 4-8 May 2020
    - Display: A. Provenzale, G. Murante, G. Vladilo, L. Silva, E. Bisesi, E. Palazzi, & J. von Hardenberg, *Climate bistability of rocky exoplanets*
- Workshop *Análisis & Interpretación*, Barcelona, Spain, 28-29 Feb 2020
    - Talk: S. Sargenti & E. Bisesi, *Los Preludios para piano de Olivier Messiaen: Escritura musical y significado*
- JAM 2019 – Journées d'Analyse Musicale de la SFAM, Conservatoire à Rayonnement Régional, Paris, France, 29-30 Nov 2019
    - Talk 1: S. Caron & E. Bisesi, *Analyser pour interpréter : L'analyse par accents*
    - Lecture-Recital: E. Bisesi & S. Caron, *Analyser pour interpréter : Une application dans Sposalizio de Liszt*
- XVI Convegno di Analisi e Teoria Musicale, Rimini, Italy, 10-13 Oct 2019
    - Talk: E. Bisesi, *Franz Liszt, Sonetto 104 del Petrarca: Analisi e interpretazione alla luce del rapporto tra musica e testo*
- MÚSICA ANALÍTICA 2019 – Porto International Symposium on the Analysis and Theory of Music, Porto, Portugal, 21-23 Mar 2019
    - Talk: E. Bisesi, *Probing different theoretical approaches to music analysis in the empirical context of music performance: A case study on the Chopin Prelude in E minor*
- JAM 2018 – Journées d'Analyse Musicale de la SFAM, Conservatoire Darius-Milhaud, Aix-en-Provence, France, 23-24 Nov 2018
    - Talk: E. Bisesi & S. Caron, *Analyse et interprétations des Dominos de François Couperin*
- XV Convegno di Analisi e Teoria Musicale, Rimini, Italy, 4-7 Oct 2018
    - Lecture-Recital: E. Bisesi, *Analysis and interpretation of La Folia in relation with musical structure and meaning*
- KOMITAS: In the crossroads of tradition and modernity, Paris, France, 28 Sep 2018
    - Talk: M. Navoyan & E. Bisesi, *The theoretical basis of Komitas's concept concerning Armenian secular and sacred music*
- XIV Convegno di Analisi e Teoria Musicale, Rimini, Italy, 28 Sep – 1 Oct 2017
    - Talk 1: E. Bisesi, *How do music emotion and imagery depend on music structure and expression? An interdisciplinary study*
    - Talk 2: A. Friberg, A. R. Addessi, M. Baroni, & E. Bisesi, *Perceived accents in melodies: Computational, musicological, and perceptual issues*
    - Lecture-Recital: S. Sargenti & E. Bisesi, *I preludi per pianoforte di Olivier Messiaen, tra rigore compositivo ed espressività*
- ISPS 2017 (6th International Symposium on Performance Science), Reykjavik, Iceland, 30 Aug – 2 Sep 2017
    - Talk: E. Bisesi, A. Friberg, A. R. Addessi, & M. Baroni, *A bottom-up model of immanent accent salience in Western art music*
- ESCOM 2017 (The 10th Conference of the European Society for the Cognitive Sciences of Music), Ghent, Belgium, 31 Jul – 4 Aug 2017
    - Poster: E. Bisesi & P. Toiviainen, *The relationship between musical structure and emotion in classical piano scores: A case study on the Theme of La Folia*

- EUROMAC9 (IX European Music Analysis Conference), Strasbourg, France, 28 Jun – 1 Jul 2017
    - Talk: E. Bisesi, *Measuring and modelling perceived distance among collections in post-tonal music: Music theory meets music psychology*
- JAM 2016 – Journées d'Analyse Musicale de la SFAM, Dijon, France, 21-22 Nov 2016
    - Talk: E. Bisesi & S. Caron, *Partition, interprétation et perception du tempo*
- XIII Convegno di Analisi e Teoria Musicale, Rimini, Italy, 29 Sep – 2 Oct 2016
    - Talk: E. Bisesi, *Measuring and modeling perceived distance among collections in post-tonal music: A case study on Webern Canon op. 16 no. 2*
- Porto International Conference on Musical Gesture as Creative Interface, Porto, Portugal, 17-19 Mar 2016
    - Talk 1: E. Bisesi, *Historical changes in the imagery and gesture evoked by piano music: Schubert, Wagner, Liszt, Schoenberg*
    - Talk 2: S. Sargenti & E. Bisesi, *Communication of structure, gesture, emotion and imagery in different interpretations of Solo by Karlheinz Stockhausen*
- ÖGMw 2015 (Annual Conference of the Austrian Society for Musicology), Graz, Austria, 18-21 Nov 2015
    - Talk: E. Bisesi, *How does music expression depend on structure?*
- XII Convegno di Analisi e Teoria Musicale, Rimini, Italy, 24-27 Sep 2015
    - Talk 1: E. Bisesi, *In che modo l'espressività musicale dipende dalla struttura?*
    - Talk 2: S. Sargenti & E. Bisesi, *Solo di Karlheinz Stockhausen: Una proposta per l'analisi della performance*
- ICME 4 (4th International Conference on Music and Emotion), Geneva, Switzerland, 12-16 Oct 2015
    - Talk: E. Bisesi, M. Baroni, & R. Parncutt, *Historical changes in the emotions and free associations evoked by piano music: Schubert, Wagner, Liszt, Schoenberg*
- LIFE IN A COSMIC CONTEXT (5th Workshop of the Italian Astrobiology Society), Trieste, Italy, 15-17 Sep 2015
    - Talk: S. Ferluga & E. Bisesi, *Probabilities of Earth-like evolution by easy and hard steps*
- ESCOM 2015 (The 9th Triennial Conference of the European Society for the Cognitive Sciences of Music), Manchester, UK, 17-22 Aug 2015
    - Talk: E. Bisesi & R. Parncutt, *The relationship between immanent emotion and musical structure in classical piano scores*
- LIPS 2015 (London International Piano Symposium), London, UK, 13-15 Feb 2015
    - Lecture-Recital: E. Bisesi, *Sketching the piano music trajectory from Schubert and Liszt to Expressionism in an emotion-based approach to music analysis*
- XI Convegno di Analisi e Teoria Musicale, Rimini, Italy, 23-25 Oct 2014
    - Talk: E. Bisesi, M. Baroni, R. Parncutt, & A. Fuchs, *Un approccio computazionale all'analisi comparata di aspetti armonici e tonali lungo l'arco della produzione pianistica di Schubert, Wagner, ultimo Liszt e primo Schoenberg*
- ICMPC13 – APSCOM-5 (13th International Conference on Music Perception and Cognition and 5th Conference for the Asia-Pacific Society for Cognitive Sciences of Music), Seoul, South Korea, 4-8 Aug 2014
    - Talk 1: M. Bodinger, E. Bisesi, & R. Parncutt, *Listeners' informal vocabulary for structure, expression, emotions and associations in piano music*
    - Talk 2: E. Bisesi, R. Parncutt, S. Caron, & C. Traube, *The immanent emotion of a musical score: An exploratory study*
    - Talk 3: F. J. Eckl, E. Bisesi, A. Friberg, & R. Parncutt, *A computational model of immanent accent salience in tonal music: Perceptual evaluation*
- WPC 2014 (6th World Piano Conference), Novi Sad, Serbia, 27 Jun – 3 Jul 2014

    - Lecture-Recital: E. Bisesi, *Sketching the trajectory from Schubert and Liszt to Expressionism in an emotion-based approach to music analysis*
- Auditive Wissenskulturen: Das Wissen klanglicher Praxis, Graz, Austria, 18-21 Jun 2014
    - Lecture-Recital: E. Bisesi & R. Parncutt: *Wanderung, Verwandlung und Verklärung*
- Seminario di Analisi e Teoria Musicale, Conservatory of Latina, Italy, 23-24 May 2014
    - Talk: E. Bisesi, *Exploring piano styles in a cognitive approach to harmony*
- ISPS 2013 (4th International Symposium on Performance Science), Vienna, Austria, 28-31 Aug 2013
    - Talk and Recital: E. Bisesi, J. MacRitchie, & R. Parncutt, *Structural communication in piano duos: Musical compatibility and individual differences in interpretation*
- SMAC – SMC 2013 (10th Sound and Music Computing Conference), Stockholm, Sweden, 30 Jul – 3 Aug 2013
    - Talk: R. Parncutt, E. Bisesi, & A. Friberg, *A preliminary computational model of immanent accent salience in tonal music*
- Rencon 2013 (10th Competition of Music Performance Rendering for Computer Systems), Stockholm, Sweden, 30 Jun 2013
    - Poster: E. Bisesi, A. Friberg, & R. Parncutt, *A preliminary computational model of immanent accent salience in tonal music*
- ICME3 (3rd International Conference on Music and Emotion), Jyväskylä, Finland, 11-15 Jun 2013
    - Talk 1: E. Bisesi, M. Bodinger, & R. Parncutt, *Listeners' informal vocabulary for emotions and free associations in piano music*
    - Talk 2: E. Bisesi, F. J. Eckl, & R. Parncutt, *What emotions and free associations characterize different musical styles?*
- SEMPRE 40th Anniversary Celebration Event, Institute of Education, University of London, UK, 14-15 Sep 2012
    - Poster: E. Bisesi, A. Friberg, & R. Parncutt, *Using computational models of music performance to model stylistic variations*
- ICMPC – ESCOM 2012 (12th International Conference on Music Perception and Cognition), Thessaloniki, Greece, 23 -28 Jul 2013
    - Poster: E. Bisesi, J. MacRitchie, & R. Parncutt, *Recorded interpretations of Chopin's Preludes: Performer's choice of score events for emphasis and emotional communication*
- EUROMAC7 (VII European Music Analysis Conference), Roma, Italy, 29 Sep – 2 Oct 2011
    - Talk: E. Bisesi & R. Parncutt, *How do musical accents induce emotions?*
- ISPS 2011 (International Symposium on Performance Science), Toronto, Canada, 24-27 Aug 2011
    - Talk: E. Bisesi, R. Parncutt, & A. Friberg, *An accent-based approach to performance rendering: Music theory meets music psychology*
- SMPC 2011 (12th meeting of the Society for Music Perception and Cognition), Rochester, NY, USA, 11-14 Aug 2011
    - Poster: E. Bisesi & R. Parncutt, *Expression in romantic piano music: Criteria for choice of score events for emphasis*
- RENCON 2011 (9th Competition of Music Performance Rendering for Computer Systems), Padova, Italy, 6 Jul 2011
    - Placement: 3rd position
    - Paper: Bisesi, E., Friberg, A., & Parncutt, R. (2011). *Director Musices (accent-based formulation)*
- KREATIVITÄT, STRUKTUR UND EMOTION (Kongress der Gesellschaft für Musiktheorie Hochschule für Musik), Würzburg, Germany, 7-10 Oct 2010
    - Poster: E. Bisesi & R. Parncutt, *An accent-based approach to music analysis*

- VITA10 (2nd Vienna Talk on Music Acoustics – *Bridging the Gaps*), Vienna, Austria, 19-21 Sep 2010
    - Talk: E. Bisesi & R. Parncutt, *An accent-based approach to automatic rendering of piano performance*
- AAPC2010 (9th Alps-Adria Psychology Conference), Klagenfurt, Austria, 16-18 Sep 2010
    - Talk: E. Bisesi, I. Gratton, & G. B. Vicario**,** *Can the tempo be exactly doubled?*
    - Poster: E. Bisesi, A. Odone, & N. Stucchi, *Self-recognition in music performance*
- ICMPC11 (11th International Conference on Music Perception and Cognition), Seattle, WA, USA, 23-27 Aug 2010
    - Talk: E. Bisesi & R. Parncutt, *The informal vocabulary of professional musicians for describing expression and interpretation*
- WHEN DARWIN MEETS COPERNICUS (3rd Workshop of the Italian Astrobiology Society), Duino, Italy, 26-28 May 2010
    - Talk: E. Bisesi, *How hard steps to rise intelligence?*
- CAIR10 (Conference on Applied Interculturality Research), Graz, Austria, 7-10 Apr 2010
    - Poster: E. Bisesi & B. Brabec de Mori, *The representation of time among different cultures and musical systems*
- CONGRESSINO DI MEDANA, Medana, Slovenia, 12-13 Jun 2009
    - Talk: E. Bisesi & G.B. Vicario, *L'effetto Brown in campo tonale*
- THE LIVING UNIVERSE (2nd Workshop of the Italian Astrobiology Society), Bologna, Italy, 28-30 May 2009
    - Talk: E. E. Bisesi, *Signatures of habitable worlds*
- SYSMUS1 (1st International Conference of Students of Systematic Musicology), Graz, Austria, 14-15 Nov 2008
    - Talk: E. Bisesi & G. B. Vicario, *Psychoacoustics aspects of the speed of melody performance*
- AAPC2008 (8th Alps-Adria Psychology Conference), Ljubljana, Slovenia, 2-4 Oct 2008
    - Talk: E. Bisesi & G. B. Vicario, *Psychoacoustics aspects of the speed of melody performance*
- XCIV Congresso Nazionale della Società Italiana di Fisica, Genova, 22-27 Sep 2008
    - Talk: E. Bisesi, *Progettazione di una proposta curricolare sul suono e la musica nella scuola secondaria*
- GIREP 2008 (Physics Curriculum Design, Development and Validation), Nicosia, Cyprus, 18-22 Aug 2008
    - Talk 1: E. Bisesi & M. Michelini, *Planning curricular proposals on sound and music with perspective secondary-school teachers*
    - Talk 2: *Comparative teaching strategies in special relativity*
- CONGRESSINO DI MEDANA, Medana, Slovenia, 12-14 Jun 2008
    - Talk: E. Bisesi & G. B. Vicario, *Aspetti psicoacustici e musicologici sulla giusta velocità di esecuzione delle melodie*
- FFP9 – Ninth International Symposium on Frontiers of Fundamental and Computational Physics, Udine, Italy, 7-9 Jan 2008
    - Talk: E. Bisesi & M. Michelini, *Learning problems and improving strategies in special relativity education*
    - Poster: E. Bisesi & M. Persic, *The baryonic versus dark matter gamma-ray luminosity of star-forming galaxies*
- The Multi-Messenger Approach to High-Energy Gamma-Ray Sources – 3rd Workshop on the Nature of Unidentified High-Energy Sources*,* Barcelona, Spain, 4-7- Jul 2006
    - Poster: E. Bisesi, *The impact of subhalos on the signals from dark matter annihilation*
- XCI Congresso Nazionale della Società Italiana di Fisica, Catania, 26 Sep – 1 Oct 2005
    - Talk 1: E. Bisesi, *Dark matter detection with the MAGIC Telescope*
    - Talk 2: E. Bisesi, *Multiwavelenght observations with the MAGIC Telescope*
    - Delegated presenter: P. Boinee, *Neural networks for gamma-hadron separation in MAGIC*

- The 29th International Cosmic Ray Conference (ICRC 2005), Pune, India, 3 – 10 Aug 2005
    - Participation in collaboration 1: H. Bartko et al., *Towards dark matter searches with the MAGIC Telescope*
    - Participation in collaboration 2: H. Bartko et al*., Search for gamma rays from the Galactic Center with the MAGIC Telescope*
- The Third Workshop on Science with the New Generation of High Energy Gamma-Ray Experiments, Udine, Italy, 30 May – 1 Jun 2005
    - Talk: E. Bisesi, *Populations of subhalos in Cold Dark Matter halos*
- FFP6 – Sixth International Symposium on Frontiers of Fundamental and Computational Physics, Udine, Italy, 26-29 Sep 2004
    - Poster 1: E. Bisesi, C*ontribution of pulsars to the gamma-ray background and their observation with the space telescopes GLAST and AGILE*
    - Poster 2: E. Bisesi, M. Mariotti, & V. Scalzotto, *Dark matter detection in gamma astroparticle experiments*
    - Participation in collaboration: D. Bastieri et al., *The MAGIC experiment and its first results*

INVITED SEMINARS, LECTURES & LECTURE-RECITALS

- E. Bisesi (forthcoming, 2021). *Teoría musical y psicología: ¿Qué sinergia?* (Departamento de Musicología, Universidad Complutense de Madrid, Spain, Fall 2021; SP)
- E. Bisesi & S. Caron (2020). *Analyse et interprétation* (Iremus, Paris (online), France, 20.10.2020; SP)
- E. Bisesi (2020). *Il ruolo delle scienze matematiche e fisiche nella comprensione della musica* (Campus Estivo di Matematica, Fisica e Astrofisica, Bardonecchia, Italy, 7.8.2020; SP)
- E. Bisesi (2019). *Tre percorsi nell'opera di Franz Liszt* (Fondazione Istituto Liszt Onlus, Bologna, Italy, 15.12.2019, LR)
- E. Bisesi, J. A. Gonano & E. Stolfo (2019). *La musica e le arti: Incontri con poesia e pittura* (Associazione Seghizzi, Gorizia, Italy, 13.7.2019; LR)
- E. Bisesi (2019). *Music as a science* (Club des Chercheurs, Collège Franco-Britannique, Paris, France, 7.3.2019; SP)
- E. Bisesi (2017). *Measuring and modelling surprise in music: From biological systems to the anthropology of music cognition* (Institut Pasteur, Paris, France, 8.12.2017; SP)
- E. Bisesi, *Sketching the trajectories from Schubert and Liszt to Expressionism in an emotion-based approach to music analysis* (Štúdio 12, Bratislava, Slovakia, 13.6.2017; LR)
- E. Bisesi & S. Sargenti, *The musical theme of 'La Folia' at the crossing point of art, science and tradition* (Civica Scuola di Musica, Zibido San Giacomo (Milano), Italy, 20.5.2017; LR)
- E. Bisesi, *From Schubert to 20th-century Expressionism: An emotion-based approach to music analysis* (Liszt Academy of Music, Budapest, Hungary, 16.3.2017; LR)
- E. Bisesi, *How does music expression depend on structure?* (KTH-CSC, Stockholm, Sweden, 24.2.2017; SP)
- E. Bisesi, *Historical changes in the emotions and imagery evoked by piano music: Schubert, Wagner, Liszt, Schoenberg* (KTH-CSC, Stockholm, Sweden, 7.2.2017; SP)
- E. Bisesi, *Modeling performance styles in piano music* (Department of Information Engineering, Padova, Italy, 2.5.2016; SP)
- E. Bisesi, *How does music expression depend on structure?* (Comenius University, Bratislava, Slovakia, 4.4.2016; SP)
- E. Bisesi, *The tonal trajectory connecting Schubert, Wagner, Liszt and Schoenberg: A psychological, computer-based analysis* (University of Montreal, Canada, 5.6.2015; LR)

- E. Bisesi, *How does music expression depend on structure?* (BRAMS – International Laboratory for Brain, Music, and Sound Research, Montreal, Canada, 29.5.2015; SP)
- E. Bisesi*, In che modo l'espressività musicale dipende dalla struttura?* (Casa della Musica, Como, Italy, 26.3.2015; SP)
- E. Bisesi, *How does music expression depend on structure?* (Ljubljana Music Academy, Slovenia, 24.11.2014; SP)
- E. Bisesi, *How does music expression depend on structure?* (Hebrew University of Jerusalem, Israel, 31.3.2014; SP)
- E. Bisesi, *Sketching the trajectory from Schubert and Liszt to Expressionism in an emotion-based approach to music analysis* (Van Leer Jerusalem Institute, Israel, 28.3.2014; LR)
- E. Bisesi, *How does music expression depend on structure?* (University of Tel Aviv & Buchman-Mehta School of Music, Tel Aviv, Israel, 27.3.2014; SP)
- E. Bisesi, *Sketching the trajectory from Schubert and Liszt to Expressionism in an emotion-based approach to music analysis* (University of Tel Aviv & Buchman-Mehta School of Music, Israel, 24.3.2014; LR)
- E. Bisesi & J. MacRitchie, *The sound of emotion* (Festsaal Meerscheinschlössl, Karl-Franzens-Universität, Graz, Austria, 13.1.2014; LR)
- E. Bisesi, *How does music expression depend on structure?* (Karl-Franzens-Universität, Graz, Austria, 27.5.2013; SP)
- E. Bisesi, *Expression, emotion and imagery in music performance* (Conservatorio della Svizzera Italiana, Lugano, Switzerland, 22.3.2013; SP)
- E. Bisesi & J. MacRitchie, *Measuring and modeling expression and emotion in piano performance* (Conservatorio della Svizzera Italiana, Lugano, Switzerland, 27.6.2012; SP)
- E. Bisesi & A. Friberg, *Modeling stylistic variations with Director Musices: An approach based on phrasing and accents* (KTH-CSC, Stockholm, Sweden, 12.6.2012; SP)
- E. Bisesi, A. Friberg, & R. Parncutt. *Analisi e modellizzazione computazionale dell'esecuzione musicale espressiva* (Fondazione Istituto Liszt Onlus, Bologna, Italy, 22.4.2012; SP)
- E. Bisesi, *Measuring and modeling expression in piano performance: Music theory meets music psychology* (Finnish Centre of Excellence in Interdisciplinary Music Research, University of Jyväskylä, Finland, 20.6.11; SP)
- E. Bisesi, *Riflessioni sul concetto di tempo tra scienza e musica* (Circolo Culturale "Tullio Crali", 23.11.2009; SP)
- E. Bisesi, *La vita tra le stelle* (Circolo Culturale "Tullio Crali", 26.3.2009; SP)
- E. Bisesi, *Sound, music and scientific education* (Institut für Physik, Karl-Franzens-Universität Graz, Austria, 3.4.2008; SP)
- E. Bisesi, *Psychoacoustic aspects on the speed in the performance of melodies* (Institut für Musikwissenschaft, Karl-Franzens-Universität Graz, Austria, 1.4.2008; SP)
- R. Bresin & E. Bisesi, *Acoustic cues and emotions in music performance* (KTH, Stockholm, 6.7.2007; SP)
- E. Bisesi, *The impact of subhalos on the signals from dark matter annihilation* (Udine University, Italy, 30.3.2006; SP)
- E. Bisesi, *The impact of subhalos on the signals from dark matter annihilation* (Stockholm University, Sweden, 8.3.2006; SP)
- E. Bisesi, *The impact of subhalos on the signals from dark matter annihilation* (Cold Dark Matter Meeting 2006, ETH, Zurich, Switzerland, 9.6.2006; SP)
- E. Bisesi, *Gamma rays from dark matter subhalos* (München, Germany, 23.7.2005; SP)
- E. Bisesi, *Observations of dark matter in the clumpy scenario* (Cold Dark Matter Meeting 2005, ETH, Zurich, Switzerland, 8.2.2005; SP)

- E. Bisesi, *Detectability of the neutralino clumps with the MAGIC Telescope* (MAGIC Bootcamp 2004, Udine University, Italy, 20.5.2004; SP)
- E. Bisesi, *Search of dark matter in gamma-ray astrophysics* (Cold Dark Matter Meeting 2004, ETH, Zurich, Switzerland, 27.1.2004; SP)
- E. Bisesi, *Search of dark matter in gamma-ray astrophysics* (Padova University, Italy, 23.1.2004; SP)

REPERTOIRE (last 10 years)

Music: works (piano solo and chamber music with piano) by: Rameau, Couperin, Corelli, A. Scarlatti, C. P. E. Bach, Mozart, Haydn, Beethoven, Schubert (piano and piano transcriptions by Liszt), Chopin, Liszt, Wagner (piano and piano transcriptions by Liszt and Stradal), Schumann, Grieg, Dvořák, Rachmaninov, Glinka, Balakirev, Mussorgsky, Prokofiev, Scriabin, Saint-Saëns, Debussy, Messiaen, Schoenberg, Webern, Bartok, Baroni, Dottori, Giommoni, Messieri, Pavia, Bolling, Mercury, Catalani, Verdi, Bellini, Puccini.

Acting (in Italian): Guillaume de Lorris/Jean de Meung (1989), Edgar Allan Poe (1993), Oscar Wilde (1993), Luigi Pirandello (2000), Tito Lucrezio Caro (2003), Francesco Petrarca (1999), Dante Alighieri (2018), Thomas Mann (stage direction, 2019).

LINK TO LIVE PERFORMANCES

ERICA BISESI' PERSONAL CHANNEL:
https://www.youtube.com/channel/UCWw-E1l2t30xkJxZWV2ynYg

XTREME RECITAL:
https://www.youtube.com/channel/UCePz_709RK52ljDGc6LnFpw

CONTRIBUTIONS IN THE MEDIA (interviews)

- E. Litváková, *Nijaký počítač nedokáže to, čo človek, hovorí talianska muzikologička* – A computer cannot replace humans, says an Italian musicologist (in Slovak, *SME Plus,* 28.4.2017)
- O. Solon, *Rencon: a 'Turing Test for musical expression'* (in English, *Wired UK,* 2.9.2013)
- R. Czepel, *Eine Maschine kann den Künstler nicht ersetzen* – A machine cannot replace the artist (in German, *Der Standard,* 16.1.2013)
- L. Yadlapalli, *Der Klang der Gefühle* – The sound of emotions (in German, *Universum Magazine,* 7.11.2012)
- V. Prinčič, *Znanstvenica in pianistka na „begu" v tujini* – Erica Bisesi is a known name in the musical and scientific circles (in Slovenian, *Primorski Dnevnik,* 21.1.2011)
- A. Pessotto, *Tra i cervelli in fuga anche la goriziana Erica* – In the brain drain also Erica from Gorizia (in Italian, *Il Piccolo,* 19.12.2010)

(updated on 12.5.2021)