

**1st International  
Course and Workshop  
on  
Audio & Music Processing**

Ibiza, Spain 6-8 June 2012

**ICAMP2012 Secretariat:**

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The event is adressed to engineers and musicians interested in new audio technologies such as 3D audio processing tools ans interactive instruments.

**Location:**

The Course and the subsequent Workshop will take place at the Professional Conservatory of Music, in the island of Ibiza, Spain.



**Registration fees:**

The registration fees to the Course and Workshop, including social events, with early discount if received before March 1<sup>st</sup> are:

320€ Early registration fee.  
400€ Regular fee.

*\*Members of the Ibiza Music Cluster have special discount.*

The number of participants is limited to 50 people. Early registration is recommended.

**Accomodation:**

Block reservations at preference rates will be arranged by the organizers. For further information, please visit the ICAMP website.

**Includes:**

Attendance to the course. (June 6<sup>th</sup> and 7<sup>th</sup>)  
Attendance to the scientific workshop. (June 8<sup>th</sup>)  
Coffe breaks, Welcoming Reception and Closing Event.

**About Ibiza:**

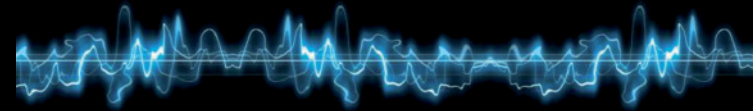
The larger of the two Pitiusan Islands (Ibiza and Formentera) is one of the Balearic Islands most popular nature, heritage and tourism attractions. Its 239 kilometres of coastline make the Punic 'Ebusus' an island with unique characteristics.

**Supporting organizations:**

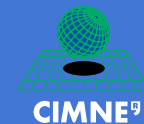
- BARCELONA MEDIA - Innovation Centre -
- CEAV - Centro de Estudios Avanzados de Ibiza
- REACTABLE S.L.



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## Objectives:

The purpose of this course and workshop is to present new emerging technologies in the field of digital audio and music processing. The focus will be in two new aspects: 3D Audio Technologies and the emergents of interactive tools to create music experiences.

## Audio & Music Processing Course:

The course is divided in three modules.

The first module (June 6<sup>th</sup>) is devoted to the basic principles of audio and music processing. The goal of this session is to introduce the basic concepts from audio and music processing and explore their application in the music industry.

The second module (June 6<sup>th</sup>) is composed of different demos of 3D audio. In the last years, new immersive 3D audio technologies have appeared in the Media Industry (cinema, television, and videogames). The attendants will enjoy the last advances in 3D audio by listening different demos in a specially designed 3D room.

The third module (June 7<sup>th</sup>) is an introduction to the mobile application Reactable Mobile, based on their interactive music creation instrument Reactable Live! Interactive instruments are designed to create the music of today and tomorrow.

## Audio & Music Processing Workshop:

The workshop will take place in the morning of June 8<sup>th</sup>. The workshop will be organised as a series of presentations by prestigious speakers in the field, followed by a round table discussion with the workshop's participants.

The aim of the workshop is to foster and stimulate the interchange of ideas about the future of audio and music processing technologies.

## Social Events:

A welcome reception will be organized on the June 6<sup>th</sup> evening. As a closing event, reactable will perform a live concert on the June 8<sup>th</sup> evening. This event will take place at Ushuaia Beach Hotel. Entrance is free for course and workshop attendance.



## Course Programme:

### Module 1: Audio and Music Processing. By Enric Guaus. Wednesday, June 6<sup>th</sup>, 9:00 – 13:30

- Introduction to Digital Audio:  
A/D Conversion, Anti Alias filter, D/A Conversion
- Discrete Fourier Transform:  
Definition, Geometric interpretation, Signal and Transform Notation, The Discrete Fourier Transform
- Spectrum Analysis:  
Windowing, Applying the convolution
- Digital filter design:  
Digital audio effects: Trémolo, Delay, Vibrato, Chorus, Reverb, Compression

### Module 2: 3D audio demos. By Toni Mateos. Wednesday, June 6<sup>th</sup>, 15:00 – 18:00

- Demo set 1 (provocation)  
3D Sound technology: how to go (and how not to go!) beyond 5.1
- Demo set 2 (explanation)  
3D Sound for cinema: recording, post-production, playback
- Demo set 3 (enjoyment)  
3D Sound in real time: video-gaming and DJ-ing Demos in loop

### Module 3: Reactable Mobile. By Sergi Jordà and Carles López. Tuesday, June 7<sup>th</sup>, 10:00 – 18:00

- How it works: basic concepts.
- PLAY!



## Workshop Programme:

Friday, June 8<sup>th</sup>, 9:00 – 13:30

### Speakers:

- Pau Arumí.  
IMMSOUND
- Xavier Serra.  
Director of the Music Technology Group at the University of Pompeu Fabra.
- Enric Guaus.  
Sonology Department, ESMUC, Barcelona.
- Sergi Jordà.  
University of Pompeu Fabra.

### Round Table Discussion

## Course Directors:

### Dr. Adan Garriga.

International Center for Numerical Methods in Engineering (CIMNE)  
Director of CIMNE-Ibiza

### Dr. Toni Mateos.

Barcelona Media Innovation Center

## Invited speakers:

### Dr. Enric Guaus

Pompeu Fabra University, Barcelona  
Escola Superior de Música de Catalunya (ESMUC)

Enric Guaus is a researcher in sound and music computing at the Music Technology Group (MTG), Universitat Pompeu Fabra (UPF), and lecturer on acoustics, electronics and computer science at the Escola Superior de Música de Catalunya (ESMUC). He's also a member of the Barcelona Laptop Orchestra.

### Dr. Toni Mateos

Director of the Audio Research Line  
Barcelona Media Innovation Centre  
Pompeu Fabra University

He has participated in European and national research projects devoted to immersive audio applications for the media industry. He is author of 20+ papers published in world-leading peer-reviewed journals, with 300+ citations. His current research focuses on 3D sound recording, manipulation and playback, acoustic field simulation in virtual environments via ray-based and finite-difference algorithms, and non-blind de-reverberation.

### Dr. Sergi Jordà

Pompeu Fabra University, Barcelona  
Music Technology Group

Sergi Jordà is a Catalan innovator, installation artist, digital musician and Associate Professor at the Music Technology Group, Universitat Pompeu Fabra in Barcelona. He is best known for directing the team that invented the Reactable.

The Reactable was popularised by Björk, who incorporated it into her 2007 Volta Tour. It has since been performed extensively and is on display in numerous science and art centres worldwide.

### Dr. Xavier Serra.

Pompeu Fabra University, Barcelona  
Director of the Music Technology Group

His research interests cover the understanding, modelling and generation of musical signals by computational means, with a balance between basic and applied research and approaches from both scientific/technological and humanistic/artistic disciplines. Dr. Serra is very active in promoting initiatives in the field of Sound and Music Computing at the local and international levels, being involved in the editorial board of a number of journals and conferences and giving lectures on current and future challenges of the field. Main research Project: CompMusic, "Computational Models for the Discovery of the World's Music", is a research project funded by the European Research Council that runs from 2011 to 2016. Its main goal is to advance in the field of Music Computing by approaching a number of the current research challenges from a multicultural perspective.