

| Monday, April 11 | |
|---------------------|--|
| 09:00 - 12:30 | Tutorial 1 Fast Prototyping Using Synopsys Tools / <i>Victor Grimblatt</i> |
| 14:00 - 17:30 | Tutorial 2 Embedded Systems in Altera FPGAs / <i>Fabio Petrassem</i> |
| Tuesday, April 12 | |
| 09:00 - 12:30 | Tutorial 1 Fast Prototyping Using Synopsys Tools / <i>Victor Grimblatt</i> |
| 14:00 - 17:30 | Tutorial 3 Designing with Altera DSP Builder / <i>Fabio Petrassem</i> |
| 18:30 - 20:00 | Conference Registration |
| Wednesday, April 13 | |
| 07:00 - 08:30 | Conference Registration |
| 08:30 - 09:00 | Opening |
| 09:00 - 10:00 | Walid Najjar Keynote |
| 10:00 - 11:00 | SPL Poster 1 + Coffee-Break |
| 11:00 - 12:30 | Embedded Soft Processors |
| 12:30 - 14:00 | Lunch Break |
| 14:00 - 15:00 | Steve Trimberger Keynote |
| 15:00 - 16:00 | SPL Poster 2 + Coffee-Break |
| 16:00 - 17:30 | Modelling, Simulation and Emulation Applications |
| 19:00 - 21:00 | Welcome Cocktail Reception |
| Thursday, April 14 | |
| 08:30 - 09:00 | Conference Registration |
| 09:00 - 10:00 | Image and Video Processing |
| 10:00 - 11:00 | Designer Forum Poster 1 + Coffee-Break |
| 11:00 - 12:30 | High-Speed Design Techniques |
| 12:30 - 14:00 | Lunch Break |
| 14:00 - 15:00 | Mike Hutton Keynote |
| 15:00 - 16:00 | SPL Poster 3 + Coffee-Break |
| 16:00 - 17:30 | Dynamic / Runtime Reconfiguration |
| 17:30 - 18:30 | Heterogeneous Computing: Opportunities and Perspectives |
| 20:00 - 22:00 | Social Dinner |
| Friday, April 15 | |
| 08:30 - 09:00 | Conference Registration |
| 09:00 - 10:00 | Telecommunications and DSP Applications |
| 09:00 - 10:00 | Designer Forum Poster 2 + Coffee-Break |
| 11:00 - 12:30 | Computer Arithmetic |
| 12:30 - 13:00 | Closing |
| 15:00 - 17:30 | Tutorial 4 FPGA and ASIC convergence / <i>Carlos Valderrama</i> |

SPL 2011

VII Southern Conference on Programmable Logic Córdoba - Argentina

April 11 - 15, 2011

Technical Program

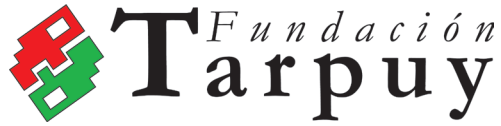
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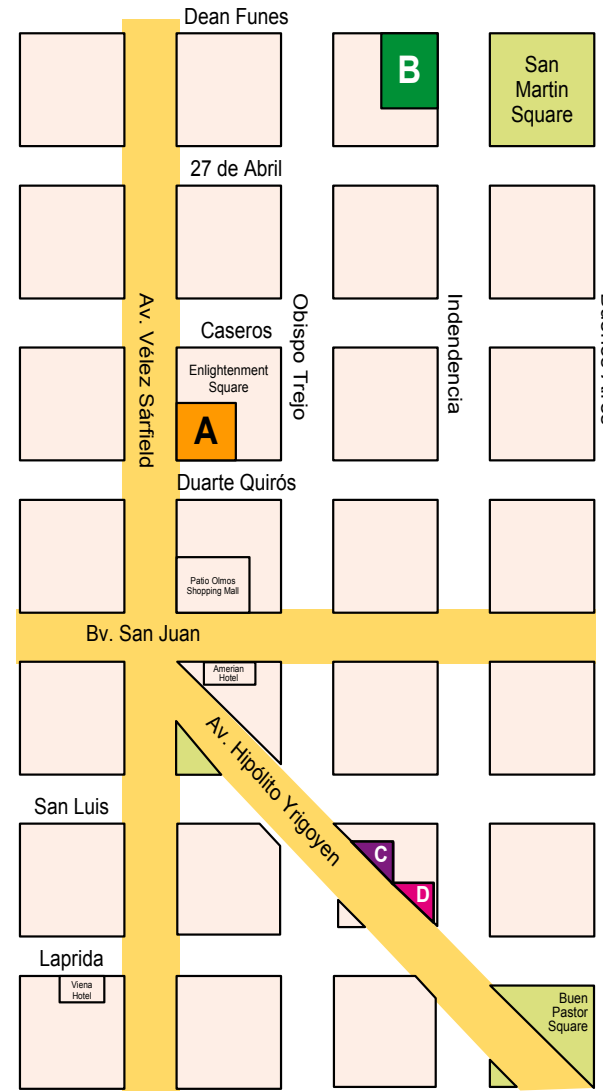


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SPL 2011 VII Southern Conference on Programmable Logic

Córdoba - Argentina

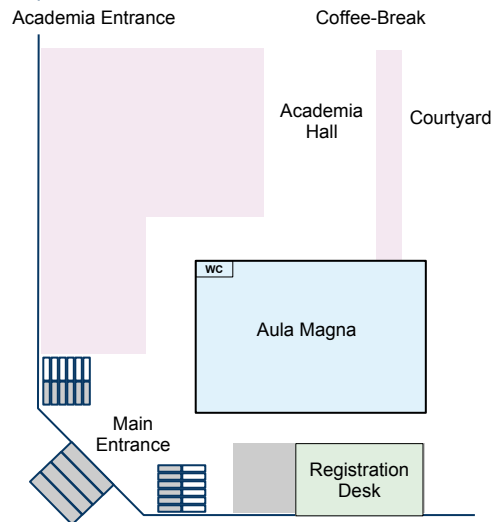


MAP REFERENCES

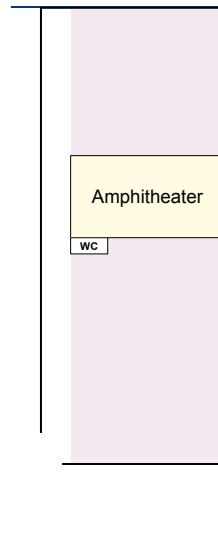
- A** **SPL2011 Conference Venue**
Facultad de Ciencias Exactas, Físicas y Naturales Universidad Nacional de Córdoba.
Av. Vélez Sársfield 299
- B** **Welcome Reception Cocktail**
Novecento Bistro Argentino.
Deán Funes 33 (Historic Cabildo)
- C** **Banquet Social Dinner**
Alcorta Carnes y Vinos
Av. Hipólito Yrigoyen 171
- D** **Lunch Restaurant**
Il Gatto
Av. Hipólito Yrigoyen 181

To University Campus (Ciudad Universitaria) - 2km
Place for Courses & Tutorials 1, 2 and 3

Ground Level



Second Level



Dean Funes

Av. Vélez Sársfield

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- María Liz Crespo, ICSTP, Italy

Welcome to SPL2011

On behalf of the Organizing Committee we would like to welcome you to Córdoba and to the 2011 VII Southern Conference on Programmable Logic (SPL). This edition continues the tradition of previous ones to become the austral meeting point for the worldwide community in the area of reconfigurable logic technology.

SPL2011 has received a large number of submissions from the following countries: Argentina, Belgium, Brazil, Colombia, Finland, France, Germany, Greece, India, Mexico, Portugal, Spain, Sweden, United Kingdom, United States of America and Uruguay. The technical program committee did a great job in selecting the best of the 99 submissions to the final program consisting of 45 regular papers: 24 with an oral presentation and 21 with a poster one. Besides, as previous editions, a Designer Forum was organized which selected 25 short papers for poster presentation.

The technical program includes 3 keynotes from well-recognized experts in the field: Walid Najjar (University of California Riverside), Steve Trimberger (Xilinx), and Mike Hutton (Altera). Moreover, a discussion panel on "Heterogeneous Computing" is scheduled for Thursday afternoon which aims at discussing the opportunities of the increasing heterogeneity of modern computer systems. Besides the technical program, 4 tutorials are organized for attendees. These tutorials are lectured by Victor Grimblatt (Synopsis), Fabio Petrassem (Altera) and Carlos Valderrama (University of Mons). Finally, it is worth mentioning that before SPL2011 two one-week intensive courses were held to encourage hardware digital design skills on advance students and professionals.

As the head of the Organizing Committee, we feel very proud of having the opportunity to organize the SPL conference in Córdoba, Argentina. We would like to thank the whole program committee, additional reviewers participating in rating the papers, and all authors of the submitted papers. Thanks also to the organization committee, volunteer contributors, and all the supporters.

Córdoba is an excellent venue for SPL, with its proximity to many high-tech companies, its cultural heritage and academic tradition. The conference takes place at National University of Córdoba in the historic building of the School of Exact, Physical and Natural Sciences which is located in the downtown area known as "Manzana de las Luces" (Block of Enlightenment). In 2000, this place was declared a World Heritage site by UNESCO. Our university is the oldest in the country and one of the first on the American continent. Currently, it is an important center of reference not only in the cultural/scientific sphere, but also in the political and social ones.

We hope you enjoy the SPL2011 program as well as your visit to Córdoba.

Welcome to Córdoba, welcome to Argentina, welcome to SPL2011!

Jorge M. Finochietto - Gustavo Sutter
SPL2011 General Chairs

Monday, April 11

09:00 - 12:30 Tutorial 1

Fast Prototyping Using Synopsys Tools (part1)

Victor Grimblatt

Room: Electrotecnia Lab

14:00 - 17:30 Tutorial 2

Embedded Systems in Altera FPGAs

Fabio Petrassem

Room: Electrotecnia Lab

Tuesday, April 12

09:00 - 12:30 Tutorial 1

Fast Prototyping Using Synopsys Tools (part2)

Victor Grimblatt

Room: Electrotecnia Lab

14:00 - 17:30 Tutorial 3

Designing with Altera DSP Builder

Fabio Petrassem

Room: Electrotecnia Lab

18:30 - 20:00 Conference Registration

Room: Registration desk

Wednesday, April 13

07:00 - 08:30 Conference Registration

Room: Registration desk

08:30 - 09:00 Opening

Room: Aula Magna

09:00 - 10:00 Walid Najjar Keynote

**Performance, Productivity and Programmability:
The Emergence of FPGA Code Accelerators**

Room: Aula Magna

Chair: Gustavo Sutter (Universidad Autonoma de Madrid, Spain)

10:00 - 11:00 hs.

SPL Poster 1 + Coffee-Break

Room: Academia Hall

Chair: Rene Cumplido (INAOE, Mexico)

A DDR3 Memory Based Time Interleaving FPGA Implementation For ISDB-T Standard

Edgardo Marchi; Marcos Cervetto; Marcelo Tenorio

FPGA implementation of two very low complexity LDPC decoders

Jorge Castiñeira; Miguel Rabini; Claudio González; Carlos Gayoso; Leonardo Arnone

N-Continuous OFDM Signal Analysis of FPGA-Based Transmissions

Enrique M Lizarraga; Victor Sauchelli; Gabriel N Maggio

High speed acquisition and storage platform for SDR applications development

Jorge Cogo; Javier G García; Pedro A. Roncagliolo; Carlos H Muravchik.

Framer Design, Verification and Prototyping for G.709 Optical Transport Networks

Jorge M Finochietto; Román Arenas; Ulises Morales; Ramiro Lopez.

A Novel Low-Latency Parallel Architecture for Digital PLL with Application to Ultra-High Speed Carrier Recovery Systems

Pablo Gianni; Hugo Carrer; Graciela Corral-Briones; Mario R Hueda.

Hardware Primitives for Packet Flow Processing Architectures

Jorge M Finochietto; Carlos Zerbini; Santiago Paz .

11:00 - 12:30 Embedded Soft Processors

Room: Aula Magna

Chair: Elías Todorovich (UNICEN, Argentina)

Customizable Security-Aware Cache for FPGA-based Soft Processors

Maciej Kurek; Ioannis Ilkos; Wayne Luk

Custom FPGA-based Micro-architecture for Streaming Computing

Jose Alves; Pedro Diniz

Notes

Music sequencer on a FPGA board

Matías López-Rosenfeld; Francisco Laborda; Patricia Borensztein.

Flexible Platform for Real-time Video and Image Processing

Paulo Da Cunha Possa; Zied El Hadhri; Laurent Jojczyk; Carlos Valderrama

SoPC platform for real-time DVB-T modulator debugging

Armando Astarloa; Jesus Lázaro; Unai Bidarte; Aitzol Zuloaga; Mikel Idirin.

High reliability capture core for data acquisition in System on Programmable Chips

Jesus Lázaro; Armando Astarloa; Aitzol Zuloaga; Jaime Jimenez; Unai Bidarte; Jose L Martín.

Desarrollo de una plataforma genérica para sistemas de visión basada en arquitectura CoreConnect

Luis Pantaleone; Lucas Leiva; Martín Vazquez

Prototipado rápido de un IP para aplicar la transformada Wavelet en imágenes

Hugo Melo; Alejandro Perez; Guillermo Gutierrez; Rodolfo Cavallero.

Cortex-M0 implementation on a Xilinx FPGA

Pedro I. Martos; Fabricio Baglivo.

Digitally Configurable Platform for Power Quality Analysis

Bruno Falduto; Ricardo Cayssials; Edgardo C. Ferro.

Solar Tracker for Compact Linear Fresnel reflector using PicoBlaze

Maiver Villena; Daniel Hoyos; Carlos Cadena; Victor Serrano; Telmo Moya; Marcelo Gea.

Toolbox NURBS and Visualization System Via FPGA

Luiz Marcelo Silva; Maria Paiva.

Una Metodología para el Desarrollo de Sistemas en Chip de Alta Performance

Marcos Oviedo; Pablo Ferreyra.

High Throughput 4x4 and 8x8 SATD Similarity Criteria Architectures for Video Coding Applications

Luciano Agostini; Julio Saracol Domingues; Dieison Soares Silveira; Leomar Soares da Rosa; Vinicius Possani.

Adquisición de Video Bajo Estándar ITU-R BT.656-4 Mediante Lógica Programable

Juan Carlos Contreras; Guillermo Gutierrez; Emilio Kowalski; Rodolfo Cavallero.

11:00 - 12:30 Computer Arithmetic

Room: Aula Magna

Chair: Altamiro A Susin (Federal University of Rio Grande do Sul, Brazil)

A FPGA IEEE-754-2008 Decimal64 Floating-Point Adder/Subtractor

Carlos Minchola; Gustavo Sutter.

Iterative Decimal Multiplication using Binary Arithmetic

Mário Véstias; Horácio C Neto.

A Suitable FPGA Implementation of Floating-Point Matrix Inversion based on Gauss-Jordan Elimination

Janier Arias Garcia; Ricardo Pezzuol Jacobi; Carlos Llanos; Mauricio Ayala Rincón.

12:30 - 13:00 Closing

Room: Aula Magna

Tutorial 4

FPGA and ASIC convergence

Carlos Valderrama; Julio Dondo Gazzano; Paulo Da Cunha Possa; Laurent Jojczyk.

Room: Aula Magna

Known-Blocking. Synchronization method for reliable processor using TMR & DPR in SRAM FPGAs

Aitor Morillo; Armando Astarloa; Jesus Lázaro; Unai Bidarte; Jaime Jimenez

12:30 - 14:00 hs.

Lunch Break

Place: Il Gatto Restaurant

14:00 - 15:00 Steve Trimberger Keynote

Programmable Logic and Moore's Two Laws

Room: Aula Magna

Chair: Eduardo Boemo (Universidad Autonoma de Madrid, Spain).

15:00 - 16:00

SPL Poster 2 + Coffee-Break

Room: Academia Hall

Chair: Guillermo Marcus (University of Heidelberg & ZITI, Germany).

An Unified Approach for Convolution-Based Image Filtering on Reconfigurable Systems

Camilo Sánchez Ferreira; Jones Yudi Mori; Carlos Llanos; Pedro Berger; Daniel Munoz.

An example of rapid design of Power electronics control with FPGA in MATLAB/Simulink

Juan Tettamanti ; Alejandro Latini; Miguel Aguirre.

Design of a FPGA based position PI servo controller for a DC motor with dry friction

Luis Castaño Londoño; Gustavo Osorio.

An extensible code generation framework for heterogeneous architectures based on IP-XACT

Thomas Perry; Richard Walke; Khaled Benkrid.

Power Estimations vs. Power Measurements in Cyclone III Devices

Juan P Oliver; Eduardo Boemo.

Balanced Bipartitioning of a Multiweighted Hypergraph for Heterogeneous FPGAs

Sagnik Mukhopadhyay; Pritha Banerjee; Susmita Surkolay.

Ultra Wideband Digital Receiver Implemented on FPGA for Mobile Robot Indoor Self-Localization

Marcelo Segura; Cristian A Sisterna; Martin A. Guzzo; Gustavo Ensínck; Carlos Gil.

16:00 - 17:30 Modelling, Simulation and Emulation Applications

Room: Aula Magna

Chair: Jean-Pierre Deschamps (Universidad Rovira i Virgili (Tarragona), Spain)

FPGA-Based Random Pulse Generator For Emulation of a Neutron Detector System in a Nuclear Reactor

Franco N Ferrucci; Claudio Verrastró; Gloria Ríos; Daniel Estryk

Experiences applying framework-based functional verification to a design for programmable logic

Oscar Goñi; Elías Todorovich; Martín Vazquez; Gustavo Sutter

Python as a Hardware Description Language: A Case Study

Jose I. Villar; Jorge Juan Chico; Manuel Jesus Bellido; Julian Viejo; David Guerrero Martos; Jan Decaluwe.

Synthesis of Robust Controllers for GALS_FPGA from Multi-Burst Graph Specification

Duarte Oliveira; Eduardo Lussari.

19:00 - 21:00 Welcome Cocktail Reception

Place: Novecento Bistro (Cabildo)

Thursday, April 14

08:30 - 09:00 Conference Registration

Room: Registration desk

09:00 - 10:00 Image and Video Processing

Room: Amphitheatre 2

Chair: Valentin Roda (Universidade Federal do Rio Grande do Norte, Brazil).

A H.264/AVC Quarter-Pixel Motion Estimation Refinement Architecture Targeting High Resolution Videos

Marcel Corrêa; Mateus Schoenknecht; Luciano Agostini .

Multichannel SDRAM Controller Design for H.264/AVC Video Decoder

Alexsandro C Bonatto; André B Soares; Altamiro A Susin .

Architecture driven memory allocation for FPGA Based Real-Time Video Processing Systems

Benny Thörnberg; Mattias O'Nils; Najeem Lawal.

10:00 - 11:00 hs.

Designer Forum Poster 1 + Coffee-Break

Room: Academia Hall

Chair: Pablo Recabarren (Universidad Nacional de Córdoba, Argentina).

IP core MAC Ethernet

Rodrigo A Melo; Salvador E Tropea.

Autonomous Intelligent Wireless Network accessible via IP

María Isabel Schiavon; Daniel Crepaldo.

Multi-Level Synthesis on the Example of a Particle Filter

Jan Langer; Daniel Froß; Enrico Billich; Marko Rößler; Ulrich Heinkel.

Layered testbench for assertion based verification

Jose Mosquera; Sol Pedre; Patricia Borensztein.

Development and Implementation of an Adaptive Narrowband Active Noise Controller

Fernando A. González; Roberto R. Rossi; German Rodrigo Molina; Gustavo F Parlanti.

Bio-inspired hardware system based in animals of cold and hot blood

Pablo A. Salvadeo; Rafael Castro López; Ángel C. Veca; Elvo H. Morales.

Análise Comparativa e Qualitativa de Ferramentas de Desenvolvimento de FPGA

Gabriel da Silva; Maximilian Luppe.

Generación automática de VHDL a partir de una Red de Petri. Análisis comparativo de los resultados de síntesis.

Roberto Martinez; Javier Belmonte; Rosa Corti; Estela D'Agostino; Enrique Giandoménico.

Using a Wii remote and a FPGA to drive a mechanical arm to aid physically challenged people

Emerson Pedrino; Valentin Roda; Bruno Martins.

Systolic Matrix-Vector Multiplier for a High-Throughput N-Continuous OFDM Transmitter

Enrique M Lizarraga; Victor Sauchelli.

Synthesis of the Hartley Transform with a Hadamard-based matrix architecture

Edval JP Santos; Gilson Alves.

Implementación de MODBUS en FPGA mediante VHDL - Capa de Enlace -

Luis Guanuco; Jonatan Panozzo Zenere; Sergio Olmedo; Agustin Rubio.

11:00 - 12:30 High-Speed Design Techniques

Room: Amphitheatre 2

Chair: Luciano Agostini (Federal University of Pelotas, Brazil).

An Euler Solver Accelerator in FPGA for Computational Fluid Dynamics Applications

Diego Sanchez-Roman; Gustavo Sutter; Sergio Lopez-Buedo; Ivan Gonzalez; Francisco Gomez-Arribas; Javier Aracil.

The MPRACE Framework: An Open Source Stack for Communication with custom FPGA-based Accelerators

Guillermo Marcus; Wenxue Gao; Andreas Kugel; Reinhard Maenner.

FPGA Implementation of an Ultra-High Speed ADC Interface

Cristian A Sisterna; Marcelo Segura; Martin A. Guzzo; Gustavo Ensinnck; Carlos Gil.

12:30 - 14:00

Lunch Break

Place: Il Gatto Restaurant

14:00 - 15:00 Mike Hutton Keynote

Technology Issues Facing the World's Largest Integrated Circuits

Room: Aula Magna

Chair: Gustavo F Parlanti (ClariPhy, Argentina)

15:00 - 16:00 hs.

SPL Poster 3 + Coffee-Break

Room: Academia Hall

Chair: Najeem Lawal (Mid Sweden University, Sweden).

FPGA implementation of a "Dynamic-Clamp" system.

Walter Bast; Damián Dellavale; Fabian Bonetto.

Hardware Particle Swarm Optimization with Passive Congregation for Embedded Applications

Daniel Munoz; Carlos Llanos; Leandro dos Santos Coelho; Mauricio Ayala Rincón.

Spanning Forests In Constant Time Using FPGAs Applied To Network Design Problems

Tiago Silva; Marcilyanne Moreira Gois; Paulo Matias; Alexandre Delbem; Eduardo Marques; Vanderlei Bonato.

FPGA Implementation of a Chaotic Oscillator Using RK4 Method

Luciana De Micco; Hilda Ángela Larrondo.

Security-Centric FPGA CAD Tools to Balance Dual-Rail Routing in WDDL Designs

Amouri Emna; Zied Marrakchi; Habib Mehrez.

Intelligent FPGA based system for shape recognition

Emerson Pedrino; Orides Morandin Jr.; Valentin Roda; Edilson Kato.

A Novel Method for Secure IP Deployment in Embedded Systems

Sunil Malipatlolla; Sorin Alexander Huss

16:00 - 17:30 Dynamic/Runtime Reconfiguration

Room: Aula Magna

Chair: Horácio C Neto (INESC-ID/IST/UTL, Portugal)

A reconfigurable GF(2^m) elliptic curve cryptographic coprocessor

Miguel Morales-Sandoval; Claudia Feregrino-Urbe; Ignacio Algreto-Badillo; Rene Cumpido.

Using partial reconfigurability to aid in debugging of FPGA designs

Andreas Ehliar; Jacob Siverskog.

Soft Error in FPGA-Implemented Asynchronous Circuits

Weidong Kuang; Yu Bai.

A Dynamic Buffer Resize Technique for Networks-on-Chip on FPGA

Mário Véstias; Horácio C Neto

17:30 - 18:30 Panel

Heterogeneous Computing: Opportunities and Perspectives

Moderator: Dr. Khaled Benkrid, The University of Edinburgh

Room: Aula Magna

20:00 - 22:00 hs.

Social Dinner

Place: Alcorta Carnes y Vinos

Friday, April 15

08:30 - 09:00 Conference Registration

Room: Registration desk

09:00 - 10:00 Telecommunications and DSP Applications

Room: Aula Magna

Chair: Carlos Valderrama (University of Mons, Belgium).

A High Data Rate BPSK Receiver Implementation in FPGA for High Dynamics Applications

Juan Maya; Nicolás Casco; Pedro A. Roncagliolo; Javier G García.

Implementation of a configuration server for a hardware Sntp synchronization platform based on FPGA

Juan Quiros; Julian Viejo; Alejandro Millan; Alejandro Muñoz; Jose I. Villar; David Guerrero Martos.

Fast Parallel Audio Fingerprinting Implementation in Reconfigurable Hardware and GPUs

José ignacio Martinez; Jaime Vitola Oyaga; Cesar Pedraza Bonilla; Adriana Sanabria Borbón.

10:00 - 11:00

Designer Forum Poster 2 + Coffee-Break

Room: Academia Hall

Chair: Orlando Micolini (Universidad Nacional de Córdoba, Argentina)