PROGRAM

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MICCAI

Foreword

Welcome to Juan les Pins!

Mapping the brain architecture and functioning is a core health ambition of the 21st century and one of the greatest challenges of modern science. Although exceptional progress have been obtained for exploring the brain during the past decades, it is still terra-incognita and calls for specific efforts in research to better understand its architecture and functioning. Multi-modal imaging, integrating functional with structural descriptions has the potential to yield a detailed picture of brain architecture and dynamics and dramatically improve our understanding of brain connectivities.

This conference is the opening event of the ERC (European Research Council) Advanced Grant project CoBCoM (Project ID: 694665-Funded under: H2020-EU.1.1) which has the overall goal to develop new generation of computational models and innovative methods for advanced and integrated analysis of diffusion Magnetic Resonance Imaging and Electro and Magneto Encephalography methods to contribute to the development of a joint dynamical structural-functional brain analysis.

It's my great pleasure to welcome you to this exceptional event with 24 guest speakers, leading researchers and experts on computational brain connectivity mapping. Spanning five days, this winter school-workshop will offer an exciting mix of introductory talks and tutorials on structural and functional connectivity using dMRI, fMRI, EEG, and MEG, completed with some oral presentations of related software tools and more advanced topics on connectomics, dynamical network analysis and clinical applications. To complete the daily oral sessions from 9 to 12:30 and 2 to 6 pm, three poster sessions facilitating the exchanges for fruitful discussions of scientific ideas are also offered. Though posters are displayed during the entire 3 days (Tuesday, Wednesday, Thursday), poster presenters are only required to be present at their poster board during the assigned time from 1pm to 2pm of their poster presentation. The posters session include a total of 27 accepted papers with original research results on structural and functional connectivity using dMRI, fMRI, EEG, and MEG.

All this event could not have been made possible without the exceptional support of the ERC, and the generosity and interest in the conference of my Institut Inria, which celebrates this year its 50th anniversary, Université Côte d'Azur and its flagship project UCA-Jedi, Miccai and also our industrial partners Olea-Medical and Huawei. Many thanks to all the members of my Athena project team contributing to CoBCoM with my special and warmest thanks to Samuel & Joannie Deslauriers-Gauthier and to Agnes Cortell for their superb and precious help throughout the organization of this event.

I hope that this event will offer an exciting opportunity to meet, exchange, discuss and learn thus advancing the state-of-the-art and paving the way for new collaborations and advances in computational brain connectivity mapping.

Rachid Deriche
Inria Sophia Antipolis – Méditerranée
Research Director

Invited Speakers

Alfred Anwander
Max Planck Institute (Germany)

Moo K. Chung
University of Wisconsin-Madison (USA)

Maureen Clerc
Côte d'Azur University, Inria (France)

Olivier Coulon
Aix-Marseille University (France)

Maxime Descoteaux
Sherbrooke University (Canada)

Samuel Deslauriers-Gauthier
Côte d'Azur University, Inria (France)

Luc Florack
Eindhoven University of Technology (Netherlands)

Alexandre Gramfort
Paris Saclay University, Inria (France)

Giorgio M. Innocenti
Karolinska Institutet (Sweden)

Maxime Guye
Aix-Marseille University (France)

Marcus Kaiser
Newcastle University (United Kingdom)

Alexander Leemans
University Medical Center Utrecht (Netherlands)

Christophe Lenglet
University of Minnesota (USA)

Gloria Menegaz
University of Verona (Italy)

Evren Özarslan
Linköping University (Sweden)

Théodore Papadopoulo
Côte d'Azur University, Inria (France)

Sudhir K. Pathak
University of Pittsburgh (USA)

Xavier Pennec
Côte d'Azur University, Inria (France)

Franco Pestilli
University of Indiana Bloomington (USA)

Dimitri Van De Ville
Swiss Federal Institute of Technology (Switzerland)

Gael Varoquaux
Paris-Saclay University, Inria (France)

Ragini Verma
University of Pennsylvania (USA)

Demian Wassermann
Côte d'Azur University, Inria (France)

Carl-Fredrik Westin
Harvard Medical School (USA)

MONDAY 20

8:45 **RACHID DERICHE** ~ Welcome address

9:00 **MARCUS KAISER** ~ A Tutorial in Connectome Analysis I: Topological and Spatial Features of Brain Networks

10:30 COFFEE BREAK

11:00 **MARCUS KAISER** ~ A tutorial in connectome analysis II: Topological and spatial features of brain networks

12:30 LUNCH BREAK

14:00 **GIORGIO INNOCENTI** ~ The development of neural connections obeys to algorithmic principles

15:00 **MAXIME DESCOTEAUX** ~ Open challenges in tractography: Addressing tractography biases and tackling the false-positive problem

16:00 COFFEE BREAK

16:30 **MAXIME CHAMBERLAND** ~ Advances in structural and functional connectivity visualization using the Fibernavigator

17:00 **EMMANUEL CARUYER** ~ Validating tractography pipelines with the help of simulated phantoms

17:30 **GABRIEL GIRARD** ~ Dipy: From Diffusion Data to Bundle Analysis

18:00 WELCOME COCKTAIL

19:30 END OF DAY

TUESDAY 21

9:00 **CHRISTOPHE LENGLET** ~ Advances in diffusion MRI from the human connectome project

10:30 COFFEE BREAK

11:00 **FRANCO PESTILLI** ~ Multidimensional encoding of brain connectomes

12:30 LUNCH BREAK AND POSTER SESSION

14:00 **OLIVIER COULON** ~ Seeding connectivity: Cortical parcellation

15:30 COFFEE BREAK

15:45 **MAUREEN CLERC** ~ Forward models for multimodal functional imaging

16:30 **ALEXANDRE GRAMFORT** ~ Methods for functional brain imaging with MEG and EEG: Better preprocessing, better inverse methods and better group studies ... with better software tools

18:00 END OF DAY

WEDNESDAY 22

9:00 **ALEXANDER LEEMANS** ~ Quality assessment and correction methods for diffusion MRI data ExploreDTI demo

10:30 COFFEE BREAK

11:00 **AUROBRATA GHOSH** ~ Image quality transfer

11:45 **SUDHIR K. PATHAK** ~ Hollow nanotube textile based phantoms for ground validation of truth measurement of diffusion MR images: Testing compartmental models and fiber tractography

12:30 LUNCH BREAK AND POSTER SESSION

14:00 **DIMITRI VAN DE VILLE** ~ Functional connectivity models: from blobs to (dynamic) networks

15:30 COFFEE BREAK

16:00 **ALFRED ANWANDER** ~ From links between functional and structural connectivity to quantitative plasticity of brain connectivity

17:30 **SAMUEL DESLAURIERS-GAUTHIER** ~ Inferring information flow in the white matter of the brain: New information provided by the fusion of dMRI and M/EEG

18:00 FREE TIME

19:45 GALA DINNER

THURSDAY 23

9:00 **EVREN ÖZARSLAN** ~ Recent advances in microstructure determination: from confinement tensors to the orientationally-averaged signal

10:30 COFFEE BREAK

11:00 **CARL-FREDRIK WESTIN** ~ Multidimensional diffusion MRI

12:00 **GLORIA MENEGAZ** ~ A generalized SMT-based framework for diffusion MRI microstructural model estimation

12:30 LUNCH BREAK AND POSTER SESSION

14:00 **LUC FLORACK** ~ Riemannian and Finslerian geometry for diffusion weighted magnetic resonance imaging

15:30 COFFEE BREAK

16:00 **THÉODORE PAPADOPOULO** ~ Invariants and shape: Application to diffusion MRI

16:45 **XAVIER PENNEC** ~ Geometric statistics for computational anatomy

18:00 END OF DAY

FRIDAY 24

9:00 **GAËL VAROQUAUX** ~ Functional connectomics: extracting and quantifying functional connectivity in fMRI Practical work: using scikit-learn and nilearn for resting-state fMRI biomarkers

10:30 COFFEE BREAK

11:00 **MOO K. CHUNG** ~ Persistent homological brain network analysis

12:30 LUNCH BREAK

14:00 **RAGINI VERMA** ~ Multimodal patho-connectomics

14:45 **MAXIME GUYE** ~ Structure-function relationship in epilepsy: insights from multimodal imaging and computational models

15:30 **DEMIAN WASSERMANN** ~ Computational neuroanatomy of the human brain white matter and beyond

16:15 **RACHID DERICHE** ~ Concluding remarks

16:30 END OF THE WORKSHOP

Poster Session

Tuesday 21 ~ 13:00 to 14:00

.1. Peter F. Neher and Klaus H. Maier-Hein
Fiber tractography within MITK diffusion

.4. Etienne St-Onge and Maxime Descoteaux
Surface-enhanced tractography: Reducing endpoints biases

.7. Carla Semedo, Manuel Jorge Cardoso and Sebastien Ourselin
Thalamic nuclei segmentation using tractography and population-specific priors

.10. Luciana Monteiro de Moura and Sylvain Bonnot
Weaving braids in the brain : Neural pathways and the mathematical modeling of braids

.13. Paolo Avesani
Data integration between ex-vivo and in-vivo white matter dissections

.16. Daniel Jörgens, Örjan Smedby and Rodrigo Moreno
Neural network approach for learning a single step of streamline tractography

.19. Giulia Bertò, Emanuele Olivetti, Nusrat Sharmin and Paolo Avesani
White matter bundle segmentation by means of streamline correspondence: Benefits and limitations

.22. Stephan Meesters, Eleftherios Garyfallidis, Jorg Portegies, Paul Boon, Pauly Ossenblok, Luc Florack and Remco Duits
Cleaning output of tractography via fiber to bundle coherence, a new open source implementation

.25. Roey Schurr, Yiran Duan, Anthony M. Norcia, Shumpei Ogawa, Jason D. Yeatman, and Aviv A. Mezer
Mapping human white matter tracts using quantitative MRI

Poster Session

Wednesay 22 ~ 13:00 to 14:00

.2. Mansoureh Fahimi Hnazaee, Elvira Khachatryan and Marc M. Van Hulle
Dynamic and distributed activation networks of semantic categories revealed using EEG source reconstruction

.5. Irene Tubikanec, Evelyn Buckwar and Massimiliano Tamborrino
Statistical inference for stochastic neural mass models

.8. Faith Chiu and Jyrki Tuomainen
Categorical perception of speech evokes hierarchical template matching in human auditory cortex: A dynamic causal odelling account

.11. Anjali Tarun and Dimitri Van De Ville
Graph diffusion model for inpainting of white matter structure from functional data

.14. Abib Alimi, Samuel Deslauriers-Gauthier and Rachid Deriche
Regularizing the ODF estimate with the Laplace-Beltrami operator in 3D polarized light imaging

.17. Tom Dela Haije and Aasa Feragen
The importance of constraints and spherical sampling in the reconstruction of higher order cumulants

.20. Patryk Filipiak, Rutger Fick, Alexandra Petiet, Mathieu Santin, Anne-Charlotte Philippe, Stephane Lehericy, Rachid Deriche and Demian Wassermann
Spatio-temporal dMRI acquisition design: Reducing the number of qt samples

.23. Guillermo Gallardo, Nathalie T.H. Gayraud, Maureen Clerc, and Demian Wassermann
Matching parcellations using Optimal Transport: A proof of concept

.26. Kostiantyn Maksymenko, Theodore Papadopoulo, Samuel Deslauriers-Gauthier
White matter fiber bundles as a source model in the MEG inverse problem

Poster Session

Thursday 23 ~ 13:00 to 14:00

.3. Robert Puzniak, Franco Pestilli, Jörn Kaufmann and Michael Hoffmann
Quantification of nerve decussation abnormalities at the optic chiasm

.6. Lorenzo Carnevale, Valentina D'Angelosante, Giovanni Grillea, Giuseppe Lembo, Daniela Carnevale and Francesco Tortorella
Application of brain MRI fiber-tracking to reveal white matter alterations in hypertensive patients with no sign of damage at conventional neuroimaging

.9. Chantal Tax, Umesh Rudrapatna, Thomas Witzel and Derek Jones
Relaxometry-diffusometry in the living human brain using ultra-strong gradients

.12. Itay Benou, Tammy Riklin Raviv and Alon Friedman
Fiber-flux diffusion density for white matter tracts analysis: Application to mild anomalies localization in contact sports players

.15. Joselisa P. Q. de Paiva, Samir C. Magalhães, Edson A. Junior, Gilmar F. Do Prado, Alan L. Eckeli and Adriana B. Conforto
Cortical grey matter in restless legs syndrome/Willis-Ekbom disease: A surface-based analysis

.18. Giuseppe Spinelli, Hovagim Bakardjian, Denis Schwartz, Bruno Dubois and Nathalie George
Reduced mid-temporal theta and occipital alpha power reflects brain amyloidosis

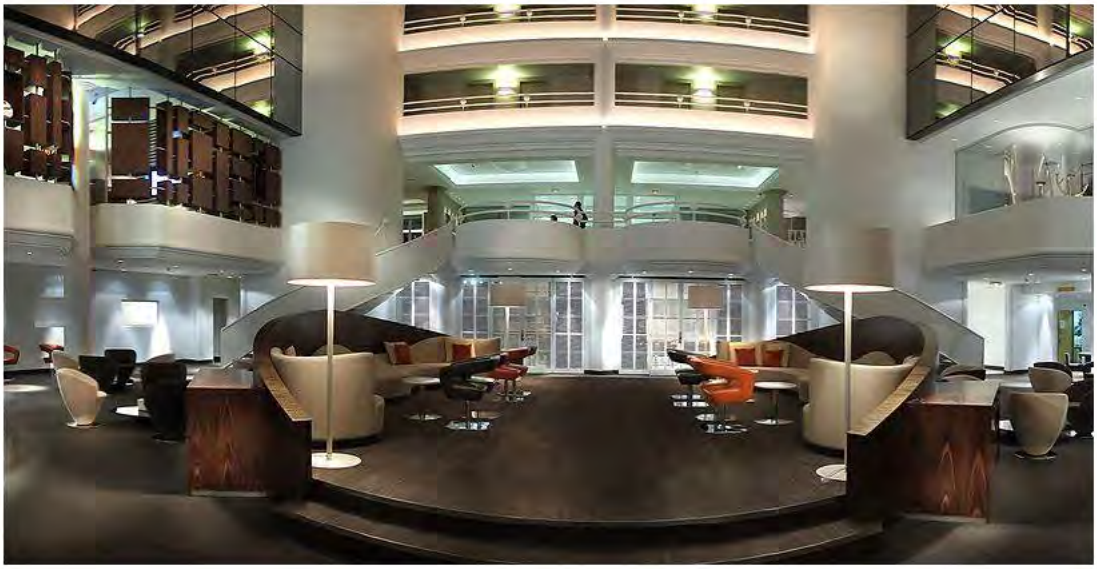
.21. Julie Coloigner, Jean-Marie Batail, Isabelle Corouge, Dominique Drapier and Christian Barillot
White matter connectivity analysis in patients suffering from depression

.24. Pauline Favre, Edouard Duchesnay and Josselin Houenou
Classification of patients with bipolar disorder based on DTI data: Relationship with clinical dimensions

.27. Alexandre Pron, Lucile Brun, Julien Sein, Christine Deruelle, Olivier Coulon
Dense and structured representations of U-shape fiber connectivity in the central sulcus

INFORMATION FOR THE WORKSHOP BANQUET

Gala dinner ~ Wednesday 22nd
Hotel AC Ambassadeur Mariott (Juan les Pins)



50-52 chemin des sables, Juan-les-Pins

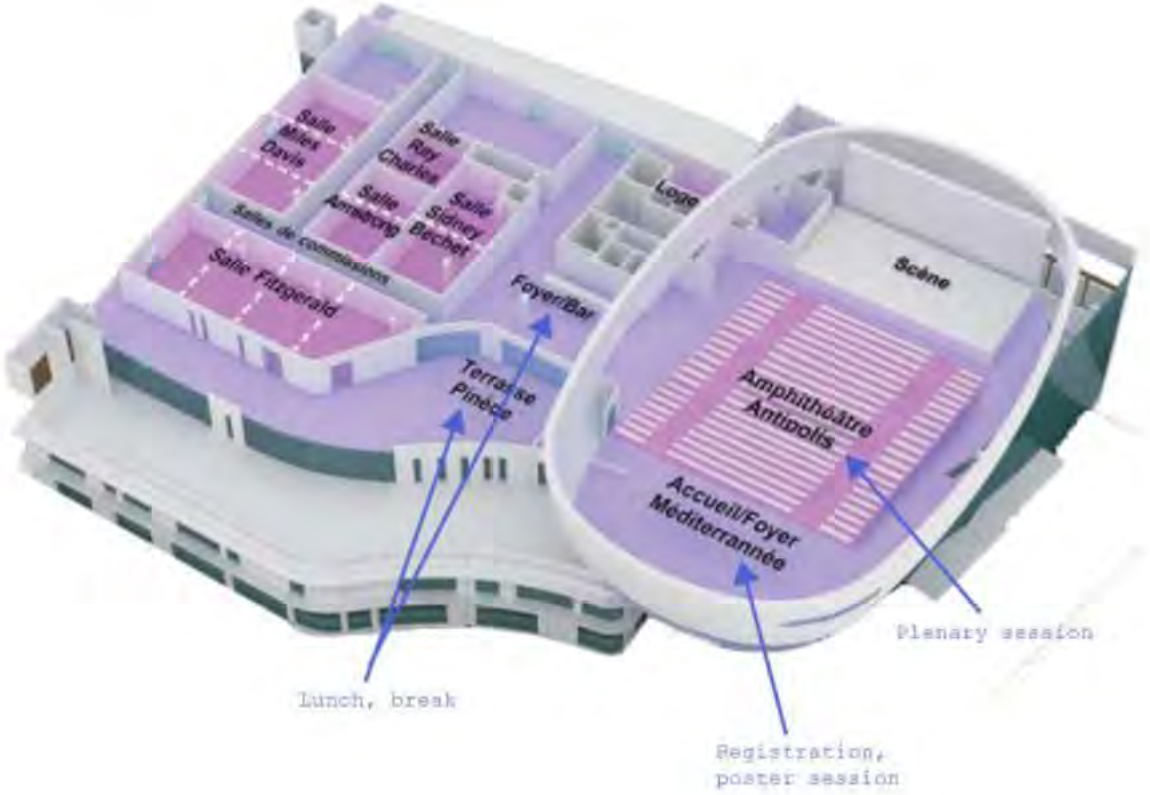
+33 4 92 93 74 10

http://www.marriott.fr/

You will have some free time to enjoy the city after the end of the day. We invite you to join us at 7:45pm, at the restaurant Hotel AC Ambassadeur Mariott, 50 meters away from the Congress center.

Workshop Rooms plan

3rd Floor



Congress Center

60 chemin des Sables - 06160 Juan-les-Pins - France

Tel: 33(0)4 22 10 60 01

www.antibesjuanlespins-congres.com

GPS coordinates: Latitude : 43.5683583 / Longitude : 7.115730900000017

Parking

Charged parking spaces for a better accessibility to the Convention center:
Interparking, the Convention center's underground parking lot: 376 spaces

Opening & closing times

The registration desk will be opened:
Monday 8:15 ~ 19:30
Tuesday to Thursday 8:30 ~ 18:30
Friday: 8:30 ~ 17:00

WIFI Access Code

User: COBCOM
Password: PDC112017

Access

By plane

Nice Cote d'Azur International Airport, 17 km from Antibes Juan-les-Pins.

2nd airport in France with 105 direct destinations and 59 regular companies.

http://en.nice.aeroport.fr/

By train

The SNCF Antibes railway station (TGV & local lines)

The SNCF Juan-les-Pins railway station (local lines)

All lines: http://www.voyages-sncf.com

By car

A8 highway, la Provençale, exit 44.

Direction Antibes center, then Juan-les-Pins.

Maps

By bus

Antibes Juan-les-Pins is served by the following lines: 250 Express, 200 Noctambus and the 200. The line 30/31 serves the Palais des Congrès, stop: «Antibes-Palais des Congrès» ENVIBUS, the urban community network (CASA), serves 16 out of the 24 municipalities that compose the district.

http://www.envibus.fr

From the airport: To reach in the Palais des Congrès, take the bus line 250(every 45 minutes), stop «Régence».

You can easily find your route with "Paca mobilité": https://www.pacamobilite.fr/

By taxi

Transfert service (English spoken): +33(0)6 09 50 92 53

Taxi Antibes-Juan les Pins: +33(0)4 93 67 67 67

NICE TO KNOW

Climate

The French Riviera benefits from a Mediterranean-type climate, characterized by exceptional sunshine almost 300 days a year and mild temperatures for most of the year.

Opening hours

Shops are usually open from 9am to 7pm from Monday to Saturday.
Department stores may stay open until 9pm. Banks are open from 8.30 to 12 noon and 2 to 4.30pm, Monday to Friday, with some branches opening on Saturday mornings.

Money/currency

Credit cards are accepted in many shops, hotels and restaurants (there is usually a minimum amount of between €7 and €15). For cash, you will find cash-points on just about every street corner (24 hours a day).
Whatever you are buying, prices are net. A gratuity is however the custom in restaurants and for certain specific services (taxi cabs.).

Emergency phone numbers

Dial the following numbers (toll-free)
European emergency call: 112
SAMU (medical emergencies): 15
Police emergency: 17
Fire-brigade: 18

Calling

To call France in France: 0 + area number + number
To call France from abroad: 00 + 33 + number
To call abroad: 00 + country exchange number + number

Electric standards

220 Volts - 380 Volts / 50 Hertz

Health Insurance and Health Emergencies

The Organizers will accept no liability for personal injuries sustained by or for loss or damage to property belonging to Congress participants, either during or as a result of the Congress or during all events. Participants are strongly recommended to seek insurance coverage for health and accident, lost luggage and trip cancellation.

A few tips for a pleasant trouble-free holiday

- You are strongly recommended to respect smoking/no smoking signs in public places.
- It is always useful to have a little cash on you at all times for little out of pocket expenses like taxi fares to the airport, drinks, etc.
- A service charge is included in the price of each item on the menu in any cafe or restaurant as required by French law. In theory, no further tipping is expected. However, it is pretty common to leave something after a bite to eat or drink. But it's never expected and is only given for good or attentive service, or at a place you habituate frequently. Extra generosity will never hurt.
- If you are driving, park only where authorized and respect speed limits on highways and motorways.

CoBCoM – Winter school Workshop 2017

This workshop is the opening event of the ERC (European Research Council) Advanced Grant project CoBCoM
(Project ID: 694665-Funded under: H2020-EU.1.1)

An event organized by

With the support