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My research has been focused on the identification of functional networks in the human brain with functional Magnetic Resonance Imaging (fMRI), ElectroEncephaloGraphy (EEG) and MagnetoEncephaloGraphy (MEG). I am know part of a project in Grenoble (collaboration INSERM U594/INSERM U704 Dynamic of Neuronal Networks) centered on fMRI/EEG. Particularly we are trying to apply the concepts of noninvasive brain imaging and nonlinear dynamics for the therapeutic control of pathological neural networks. At the moment, our concern is restricted to epilepsy

CV

Nationality: French.

Date of birth: May 22, 1976 (France).

• Current position

- 2005-Present: Chargé de recherche 2ème classe (CR2), INSERM: full time researcher at UM UJF/Inserm U594. I am contributing to the peer-review process with several journals:
 - Human Brain Mapping Journal (Member of the Editorial Board)
 - NeuroImage
 - IEEE Transactions in Biomedical Engineering
 - IEEE Transactions in Signal Processing
 - Clinical Neurophysiology
 - Epileptic Disorders
 - Revue de Neuropsychologie
- 1998-Present: Professeur Agrégé in Applied Physics, French Ministry of Education.

• Educational background

- 1995-1999: Student at Ecole Normale Supérieure de Cachan, Cachan, France. Department of Electrical Engineering and Applied Physics.

• Previous positions

- 2002-2004: Wellcome Trust Research Fellow, Functional Imaging Laboratory, Department of Imaging Neuroscience, University College London.
- 1999-2002: PhD student (Signal Processing), CNRS UPR 640 Cognitive Neuroscience and Cerebral Imaging, La Salpêtrière Hospital, Paris, France.
- 1998-1999: Master student (Biomedical Engineering), UM UJF/Inserm U438 RMN Bioclinique, Grenoble Hospital, France.

Publications

- **Regular articles**

- David O, Kilner J & Friston KJ (in press) Mechanisms of evoked and induced responses in MEG/EEG. *Neuroimage*.
- Kiebel S, David O & Friston KJ (2006) Dynamic Causal Modelling of Evoked Responses in EEG/MEG with lead-field parameterization. *Neuroimage*, 30(4):1273-84.
- David O, Harrison L, Mattout J, Penny W, Kiebel S, Kilner J & Friston KJ (2006) Dynamic Causal Modelling of Evoked Responses in EEG and MEG. *Neuroimage*, 30(4):1255-72.
- Harrison LM, David O & Friston KJ (2005) Stochastic models of neuronal dynamics, *Philos Trans R Soc Lond B Biol Sci*, 360(1457):1075-91.
- David O, Harrison L & Friston KJ (2005) Modelling event-related responses in the brain, *NeuroImage*, 25(3):756-70.
- Cosmelli D, David O, Lachaux J-P, Martinerie J, Garnero L, Renault B & Varela F (2004) Waves of consciousness : ongoing cortical patterns during binocular rivalry, *NeuroImage*, 23(1):128-40.
- David O, Cosmelli D & Friston KJ (2004) Evaluation of different measures of functional connectivity using a neural mass model, *NeuroImage*, 21(2):659-73.
- Mahagne M-H, David O, Darcourt J, Migneco O, Dunac A, Bertrand F, Chatel M & Baron J-C (2004) Voxel-based mapping of cortical ischemic damage using Tc 99m L,L-ethyl cysteinyl dimer SPECT in acute strokes, *Journal of Neuroimaging*, 14(1):23-32.
- David O & Friston KJ (2003) A neural mass model for MEG/EEG: coupling and neuronal dynamics, *NeuroImage*, 20(3):1743-55.
- David O, Cosmelli D & Garnero L (2003) A multi-trial analysis for revealing significant cortico-cortical networks in magnetoencephalography and electroencephalography, *NeuroImage*, 20(1):186-201.
- David O & Garnero L (2002) Time-coherent expansion of MEG/EEG cortical sources, *NeuroImage*, 17(3):1277-89.
- David O, Garnero L, Cosmelli D & Varela F (2002) Estimating neural dynamics from MEG/EEG cortical current density maps: Application to the reconstruction of large-scale cortical synchrony, *IEEE Trans. Biomed. Eng.*, 49(9):975-87.

- **Invited articles**

- Stephan KE, Mattout J, David O & Friston KJ (2006) Models of functional neuroimaging data. *Current Medical Imaging Reviews*, 2(1):15-34.
- Friston KJ, Penny W & David O (2005) Modeling brain responses, *Int. Rev. Neurobiology*, 66:89-124.
- David O, Cosmelli D, Lachaux J-P, Baillet S, Garnero L & Martinerie J (2003) A theoretical and experimental introduction to the non-invasive study of large-scale neural phase synchronisation in human beings, *International Journal of Computational Cognition*, 1(4):53-77. [pdf](#)

- **Book chapters**
 - David O, Kiebel SJ & Friston KJ (in press) Modeling time series in neuroimaging, in: "Brain Mapping: New Research", Nova Science Publishers.

- **Posters for download**
 - David O, Minotti L & Kahane P. Chaotic itinerancy and neural synchrony in brain function as revealed by 1Hz electrical stimulation, 12th Annual Meeting of the Organization for Human Brain Mapping, HBM 2006, Florence, June 11-15, 2006. [pdf \(0.8 Mo\)](#) [ppt \(6.5 Mo\)](#)

Talks

- **Talks for download**
 - 7th European Congress on Epileptology, ECE 2006, Helsinki, Finland, July 2-6, 2006: Vasoreactivity to CO2 as measured by functional magnetic resonance imaging is enhanced in epileptic regions in the Genetic Absence Epilepsy Rat from Strasbourg (GAERS) [ppt \(3.6 Mo\)](#) [pdf \(2.6 Mo\)](#)
 - 6th Congress of the Federation of European Psychophysiology Societies, FEPS 2006, Budapest, Hungary, May 31-June 3, 2006: The role of neural synchronisation in cognition as revealed by induced epileptic seizures [ppt \(3 Mo\)](#) [pdf \(3 Mo\)](#)
 - Seminar of the Grenoble Institute of Neuroscience, Grenoble, France, February 06, 2006: What is neural synchronisation? (in French) [ppt \(9 Mo\)](#) [pdf \(16 Mo\)](#)
 - Diplôme d'Habilitation à Diriger les Recherches (DHDR), Joseph Fourier University, Grenoble, France, October 07, 2005: Functional cerebral networks: From identification towards control (in French) Text: [doc \(6.7 Mo\)](#), Presentation: [zipped ppt \(46 Mo\)](#)
 - 7ème colloque de la Société des Neurosciences, Lille, France, May 17-20, 2005: Studying brain functions with simultaneous EEG and functional MRI in healthy subjects and epileptic patients (in French) [zipped ppt \(26 Mo\)](#)
 - FIL 10th anniversary/MEG day, London, UK, October 15, 2004: Measuring connectivity in the brain with MEG [zipped ppt \(26 Mo\)](#)
 - 14th International Conference on Biomagnetism, Biomag 2004, Boston, Massachusetts USA, August 8-12, 2004: Studying effective connectivity with a neural mass model of MEG/EEG evoked responses [zipped ppt \(13 Mo\)](#)
 - 10th Annual Meeting of the Organization for Human Brain Mapping, HBM 2004, Budapest, Hungary, June 13-17, 2004: Imaging of synchronous cortical networks during binocular rivalry [zipped ppt \(13 Mo\)](#)

- **Other communications**
 - David O, Garnero L, Cosmelli D & Varela F: Use of surrogate data in the distributed MEG/EEG inverse problem: application to the estimation of dynamic properties of neural networks, 13th International Conference on Biomagnetism, Biomag 2002, Jena, Germany, August 10-14, 2002, pp. 822-825, 2002, Verlag, Eds. H. Nowak, J. Haueisen, F. Giessler and R. Huonker.

- Baillet S, Pescatore J, David O, Gavit L, Bloch I & Garnero L: From new approaches to FEM volume modeling to the mapping of MEG/EEG source interactions, Proceedings of the 3rd International Symposium on Noninvasive Functional Source Imaging, NFSI 2001, Innsbruck, Austria, September 6-9, 2001, Biomedizinische Technik, Vol. 46, Supp-2, pp. 35-37, 2001.
- David O, Garnero L & Varela F: A new approach to the MEG/EEG inverse problem for the recovery of cortical phase-synchrony, Proceedings of the 17th International Conference on Information Processing in Medical Imaging, IPMI 2001, Davis, CA, June 18-22, LNCS vol. 2082, pp. 272-285, 2001, Springer, Eds. M. F. Insana and R. Leahy.
- Baillet S, Gavit L, David O, Pescatore J, Chupin M, Schwartz D, Ducorps A, Varela F & Garnero L: Avancées récentes en imagerie électromagnétique fonctionnelle cérébrale, 3ème réunion annuelle de la Société d'Anatomie Fonctionnelle Cérébrale, Ecole Nationale Supérieure des Télécommunications, Paris, May 10-11, 2001.
- David O, Garnero L & Varela F: Etude des synchronies cérébrales estimées à partir de signaux de surface à l'aide du problème inverse en MEG/EEG, Journée de traitement du signal en EEG, Hôpital de Lille, March 2001.
- David O, Warnking J & Segebarth C: Optimization of the distribution of short inter-stimuli intervals in event-related fMRI, Proc.16th Ann. Meet. ESMRMB, Sevilla, Spain, September 16-19, 1999.
- David O, Migneco O, Mahagne M-H, Koulibaly P-M, Darcourt J & Bussière F: Analyse de la perfusion cérébrale à la phase aiguë de l'AVC, IVèmes Journées de Recherche en Imagerie Médicale, Toulouse, France, February 3-4, 1998.

Teaching

- Journées IRMf du Kremlin Bicêtre, France, February 24, 2006: Bayesian analysis for the study of functional segregation and integration (in French) [pdf \(18 Mo\)](#) [ppt \(11 Mo\)](#)
- Master recherche Psychologie Cognitive, Pierre Mendès-France University, Grenoble, France, November 29, 2005: Electroencephalography and Magnetoencephalography (in French) [pdf \(26 Mo\)](#) [zipped ppt \(40 Mo\)](#)
- Master professionnel Neuropsychologie, Savoie University, Chambéry, France, November 24, 2005: Anatomical and functional approaches to cerebral investigation (in French) [pdf \(41 Mo\)](#) [zipped ppt \(99 Mo\)](#)
- fMRI: An introduction, ADR Inserm Rhône-Alpes, Lyon, France, September 26-30, 2005: Anatomical and functional connectivity (in French) [pdf \(15 Mo\)](#) [ppt \(9.2 Mo\)](#)
- Functional connectivity in fMRI, Inserm U594, Grenoble, France, May-June 2005 (in French)
 - May 3, 2005: Introduction and functional connectivity [pdf \(13 Mo\)](#) [ppt \(4.2 Mo\)](#)
 - May 10, 2005: Effective connectivity [pdf \(8.7 Mo\)](#) [ppt \(4.1 Mo\)](#)
 - May 31, 2005: Dynamic causal modelling: Theory (Many thanks to Klaas Stephan) [pdf \(8.3 Mo\)](#) [ppt \(1.1 Mo\)](#)
 - June 07, 2005: Dynamic causal modelling: Applications (Many thanks to Klaas Stephan) [pdf \(9.6 Mo\)](#) [ppt \(3.7 Mo\)](#)