

# Publication List

February 27, 2023

## 1 Peer-reviewed journal articles

- [1] Chaithya G R and **P. Ciuciu**, “Jointly learning non-cartesian k-space trajectories and reconstruction networks for 2d and 3d mr imaging through projection,” *BioEngineering*, vol. 10, no. 2, pp. 158, Feb. 2023.
- [2] Z. Ramzi, K. Michalewicz, J.-L. Starck, T. Moreau, and **P. Ciuciu**, “Wavelets in the deep learning era,” *Journal of Mathematical Imaging and Vision*, vol. 65, no. 1, pp. 140–151, Jan. 2023.
- [3] G. Daval-Fr erot, B. Massire, A. Mailhe, M. Nadar, A. Vignaud, and **P. Ciuciu**, “Iterative  $\Delta B_0$  field map estimation for off-resonance correction in non-Cartesian susceptibility weighted imaging,” *Magnetic Resonance in Medicine*, vol. 88, pp. 1592–1607, 2022.
- [4] Chaithya G R, P. Weiss, A. Massire, A. Vignaud, and **P. Ciuciu**, “Optimizing full 3D SPARKLING trajectories for high-resolution Magnetic Resonance imaging,” *IEEE Transactions on Medical Imaging*, vol. 41, no. 8, pp. 2105–2117, Aug. 2022.
- [5] Z. Ramzi, Chaithya G R, J.-L. Starck, and **P. Ciuciu**, “Density-Compensated Unrolled Networks for 2D and 3D non-Cartesian MRI Reconstruction,” *IEEE Transactions on Medical Imaging*, vol. 41, no. 7, pp. 1625–1638, July 2022.
- [6] H. Cherkaoui, T. Moreau, A. Halimi, C. Leroy, and **P. Ciuciu**, “Multivariate semi-blind deconvolution of fMRI time series,” *NeuroImage*, vol. 241, no. 118418, Nov. 2021.
- [7] M. Muckley, B. Riemenschneider, A. Radmanesh, S. Kim, G. Jeong, J. Ko, Y. Jun, H. Shin, D. Hwang, M. Mostapha, S. Arberet, Z. Nickel, D. Ramzi, **P. Ciuciu**, J.-L. Starck, J. Teuwen, D. Karkalousos, C. Zhang, Z. Sriram, A. Huang, N. Yakubova, Y.W. Lui, and F. Knoll, “Results of the 2020 fastMRI Challenge for Machine Learning MR Image Reconstruction,” *IEEE Transactions on Medical Imaging*, vol. 40, no. 9, pp. 2306–2317, Sep. 2021.

- [8] M. Jacob, L. El Gueddari, J.-M Lin, G. Navarro, A. Jannaud, P. Bayle-Guillemaud, **P. Ciuciu**, and Z. Saghi, “Gradient-based and wavelet-based compressed sensing approaches for highly undersampled tomographic datasets,” *Ultramicroscopy*, vol. 225, no. 113289, Apr. 2021.
- [9] L. El Gueddari, Chaithya G R, E. Chouzenoux, and **P. Ciuciu**, “Calibration-less multi-coil compressed sensing Magnetic Resonance Image reconstruction based on OSCAR regularization,” *Journal of Imaging*, vol. 7, no. 3, pp. 58–77, Mar. 2021, Special issue on *Inverse problems and Imaging*.
- [10] D. La Rocca, H. Wendt, V. van Wassenhove, **P. Ciuciu**, and P. Abry, “Fractal connectivity: Revisiting functional connectivity for infraslow scale-free brain dynamics using complex wavelets,” *Frontiers in Physiology*, vol. 11, no. Article 578537, Jan. 2021.
- [11] S. Farrens, A. Grigis, , Z. El Gueddari, L. Ramzi, Chaithya G R, S. Starck, B. Sarthou, H. Cherkaoui, **P. Ciuciu**, and J.-L. Starck, “PySAP: Python Sparse Data Analysis Package for multidisciplinary image processing,” *Astronomy and Computing*, vol. 32, no. 100402, July 2020.
- [12] C. Lazarus, P. Weiss, , L. El Gueddari, F. Mauconduit, A. Massire, M. Ripart, A. Vignaud, and **P. Ciuciu**, “3D variable-density SPARKLING trajectories for high-resolution  $T_2^*$ -weighted Magnetic Resonance Imaging,” *NMR in Biomedicine*, vol. 33, no. e4349, pp. 1–12, 2020.
- [13] Z. Ramzi, **P. Ciuciu**, and J.-L. Starck, “Benchmarking MRI reconstruction neural networks on large public datasets,” *Applied Sciences, Special issue on Signal Processing and Machine Learning for Biomedical Data*, vol. 10, no. 5, pp. 1816, Feb. 2020.
- [14] D. La Rocca, **P. Ciuciu**, D. Engemann, and V. van Wassenhove, “Emergence of  $\beta$  and  $\gamma$  networks following multisensory training,” *Neuroimage*, vol. 206, pp. Article 116313, Feb. 1 2020.
- [15] C. Lazarus, P. Weiss, N. Chauffert, F. Mauconduit, L. El Gueddari, C. Destrieux, I. Zemmoura, A. Vignaud, and **P. Ciuciu**, “SPARKLING: variable-density k-space filling curves for accelerated  $T_2^*$ -weighted MRI,” *Magnetic Resonance in Medicine*, vol. 81, no. 6, pp. 3643–3661, June 2019.
- [16] Patryk Filipiak, Rutger Fick, Mathieu Petiet, Alexandra Santin, Anne-Charlotte Philippe, Stéphane Lehericy, **P. Ciuciu**, Rachid Deriche, and Demian Wassermann, “Reducing the number of samples in spatio-temporal dMRI acquisition design,” *Magnetic Resonance in Medicine*, vol. 81, no. 5, pp. 3218–3233, May 2019.
- [17] A. de Pierrefeu, T. Löfstedt, C. Laidi, F. Hadj-Selem, J. Bourgin, T. Hajek, F. Spaniel, M. Kolenic, **P. Ciuciu**, N. Hamdani, M. Leboyer, T. Fovet, R. Jardri, J. Houenou, and E. Duchesnay, “Identifying a neuroanatomical signature of schizophrenia, reproducible across sites and stages, using machine-learning with structured sparsity,” *Acta Psychiatrica Scandinavica*, vol. 138, no. 6, pp. 571–580, Dec. 2018.
- [18] D. La Rocca, N. Zilber, P. Abry, V. van Wassenhove, and **P. Ciuciu**, “Self-similarity and multifractality in human brain activity: a wavelet-based analysis of scale-free brain dynamics,” *Journal of Neuroscience Methods*, vol. 309, pp. 175–187, Nov. 2018.

- [19] C. Lazarus, P. Weiss, A. Vignaud, and **P. Ciuciu**, “An empirical study of the maximum degree of acceleration in Compressed Sensing MRI for  $T_2^*$ -weighted imaging,” *Magnetic Resonance Imaging*, vol. 53, pp. 112–122, Nov. 2018.
- [20] A. de Pierrefeu, T. Fovet, F. Hadj-Selem, T. Löfstedt, **P. Ciuciu**, S. Lefebvre, P. Thomas, R. Lopes, R. Jardri, and E. Duchesnay, “Prediction of activation patterns preceding hallucinations in patients with schizophrenia using machine learning with structured sparsity,” *Human Brain Mapping*, vol. 39, no. 4, pp. 1777–1788, 2018.
- [21] A. de Pierrefeu, T. Löfstedt, F. Hadj-Selem, M. Dubois, **P. Ciuciu**, V. Frouin, and E. Duchesnay, “Structured sparse Principal Component Analysis with the TV-Elastic net penalty,” *IEEE Transactions on Medical Imaging*, vol. 37, no. 2, pp. 396–407, 2018.
- [22] N. Chauffert, **P. Ciuciu**, J. Kahn, and P. Weiss, “A projection method on measures sets,” *Constructive Approximation*, vol. 45, no. 1, pp. 83–111, 2017.
- [23] M. Albughdadi, L. Chaari, J.-Y. Tournet, F. Forbes, and **P. Ciuciu**, “A Bayesian non-parametric hidden Markov model for hemodynamic brain parcellation,” *Signal Processing*, pp. 132–146, 2017.
- [24] N. Chauffert, **P. Ciuciu**, J. Kahn, and P. Weiss, “A projection method on measures sets,” *Constructive Approximation*, vol. 45, no. 1, pp. 83–111, Feb. 2017.
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- [27] F. Pedregosa, M. Eickenberg, **P. Ciuciu**, B. Thirion, and A. Gramfort, “Data-driven HRF estimation for encoding and decoding models,” *Neuroimage*, vol. 104, pp. 209–220, Jan. 2015.
- [28] L. Chaari, **P. Ciuciu**, S. Mériaux, and J.-C. Pesquet, “Spatio-temporal wavelet regularization for parallel MRI reconstruction: application to functional MRI,” *MAGMA*, vol. 27, no. 6, pp. 509–529, Dec. 2014.
- [29] N. Chauffert, **P. Ciuciu**, J. Kahn, and P. Weiss, “Variable density sampling with continuous trajectories. Application to MRI,” *SIAM Journal on Imaging Sciences*, vol. 7, no. 4, pp. 1962–1992, Nov. 2014.
- [30] A. Florescu, E. Chouzenoux, J.-C. Pesquet, **P. Ciuciu**, and S. Ciochina, “A majorize-minimize memory gradient method for complex-valued inverse problems,” *Signal Processing*, vol. 103, pp. 285–295, Oct. 2014.

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- [32] N. Zilber, **P. Ciuciu**, A. Gramfort, and V. van Wassenhove, “Supramodal plasticity optimizes perceptual learning,” *Neuroimage*, vol. 93, no. Part 1, pp. 32–46, June 2014.
- [33] T. Vincent, S. Badillo, L. Chaari, C. Bakhous, F. Forbes, and **P. Ciuciu**, “Flexible multivariate hemodynamics fMRI data analyses and simulations with PyHRF,” *Frontiers in Neurosciences*, vol. 8, Article 67, pp. 1–15, Apr. 2014.
- [34] S. Badillo, T. Vincent, and **P. Ciuciu**, “Group-level impacts of within- and between-subject hemodynamic variability in fMRI,” *Neuroimage*, vol. 82, pp. 433–448, 15 Nov. 2013.
- [35] L. Chaari, T. Vincent, F. Forbes, M. Dojat, and **P. Ciuciu**, “Fast joint detection-estimation of evoked brain activity in event-related fMRI using a variational approach,” *IEEE Trans. Med. Imag.*, vol. 32, no. 5, pp. 821–837, May 2013.
- [36] N. Zilber, **P. Ciuciu**, A. Gramfort, and V. van Wassenhove, “Supramodal processing in visual learning and plasticity,” *Multisensory Research*, vol. 26, pp. 113–114, 2013.
- [37] **P. Ciuciu**, G. Varoquaux, P. Abry, S. Sadaghiani, and A. Kleinschmidt, “Scale-Free and Multifractal Time Dynamics of fMRI Signals during Rest and Task,” *Frontiers in physiology*, vol. 3, no. Article 186, pp. 1–18, June 2012.
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## 2 Manuscripts under review (2023)

- [1] M. Dumeur, S. H. Wang, **P. Ciuciu**, and M. Palva, “Multifractality in the Landau–Ginzburg theory of cortex dynamics,” *submitted to Physical Review Letters*, CEA/NeuroSpin, Inria-CEA MIND and Aalto University, Helsinki, Finland, Feb. 2023.
- [2] G. Daval-Fr erot, A. Massire, B. Mailhe, B. Nadar, M. Bapst, A. Luciani, A. Vignaud, and **P. Ciuciu**, “Deep learning-assisted model-based off-resonance correction for non-Cartesian susceptibility weighted imaging,” *under review at Magnetic Resonance in Medicine*, CEA/NeuroSpin & Inria-CEA MIND and Siemens Heathineers SAS, Saclay, France, Feb. 2023.
- [3] Chaithya G R, G. Daval-Fr erot, A. Massire, A. Vignaud, and **P. Ciuciu**, “Improving SPARKLING trajectories through Minimized Off-Resonance Effects and Gridding of Low Frequencies,” *under review Magnetic Resonance in Medicine*, CEA/NeuroSpin & Inria-CEA MIND, Saclay, France, Feb. 2023.
- [4] Z. Amor, Chaithya G R, B. Daval-Fr erot, G. Thirion, F. Mauconduit, **P. Ciuciu**, and A. Vignaud, “Non-Cartesian 3D-SPARKLING vs Cartesian 3D-EPI encoding schemes for functional Magnetic Resonance Imaging at 7 Tesla,” *submitted to Plos One*, CEA/NeuroSpin, Inria-CEA MIND and Siemens Heathineers SAS, Saclay, France, Jan. 2023.
- [5] G. Biagi, **P. Ciuciu**, and Z. Saghi, “Learning based image reconstruction for electron tomography under limited data acquisition conditions,” *submitted to Ultramicroscopy*, CEA Grenoble and CEA/NeuroSpin, & Inria-CEA MIND, Grenoble, France, Feb. 2023.

### 3 Scientific mediation articles (since 2005)

- [1] C. Ferrand and **P. Ciuciu**, “La recherche en astrophysique façonne les algorithmes d’imagerie de demain,” *Dr Imago*, vol. <https://docteurimago.fr>, pp. 1–4, July 2021.
- [2] **P. Ciuciu**, “When the brain meets the stars: Knowledge made visible to the naked eye,” *Contact Magazine*, vol. XX, pp. 46–47, Mar. 2021.
- [3] **P. Ciuciu** and J-L. Starck, “De la tête aux étoiles,” *Les voies de la Recherche – Clefs CEA*, vol. 70, pp. 46–47, Mar. 2020.
- [4] **P. Ciuciu** and B. Thirion, “Échantillonnage comprimé pour temps d’acquisition réduit,” *Les Défis du CEA*, , no. 225, pp. 2–3, Mar. 2018.
- [5] **P. Ciuciu** and B. Thirion, “Comprendre le cerveau par l’image: L’imagerie par résonance magnétique fonctionnelle sensible au débit sanguin,” *Clefs CEA*, , no. 56, pp. 38–42, Dec. 2007.
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### 4 Abandoned manuscripts

- [1] D. La Rocca, **P. Ciuciu**, P. Abry, and V. van Wassenhove, “Learning-induced modulation of multifractal brain dynamics during visual motion discrimination,” submitted to *The Journal of Neuroscience*, CEA/NeuroSpin, INRIA Saclay Parietal & INSERM UNICOG U992, Saclay, France, Mar. 2019.
- [2] S. Bougacha, R. Phlypo, B. Thirion, **P. Ciuciu**, and G. Varoquaux, “On the geometry of functional connectomes: how to compute group-level statistics,” in revision to *Neuroimage*, CEA NeuroSpin, Gif-sur-Yvette, France, Jan. 2018.
- [3] **P. Ciuciu**, S. Bougacha, F. Boumezbeur, S. Desmidt, C. Ginisty, L. Laurier, J.-R. Deverre, L. Hertz-Pannier, N. Tardy, M. Pueyo, and K. Bernard, “S 47445, a positive allosteric modulator of ampa receptors, improves functional connectivity of brain networks in elderly healthy volunteers during a working memory task,” submitted to *European J. Neuropsychopharmacology*, CEA/NeuroSpin & IRIS Servier, Saclay, France, July 2017.
- [4] A. Frau-Pascual, S. Bougacha, Th. Perret, F. Forbes, and **P. Ciuciu**, “Functional ASL and BOLD fMRI group analysis: a comparison of different methodologies,” submitted to *Neuroimage*, CEA/NeuroSpin & INRIA Saclay Parietal, Saclay, France, July 2017.
- [5] F. Frau-Pascual, A. Forbes, Th. Perret, and **P. Ciuciu**, “Classical vs Bayesian analysis of functional ASL data: A model comparison approach,” submitted to *IEEE Transactions on Medical Imaging*, CEA/NeuroSpin & INRIA Saclay Parietal, Saclay, France, June 2017.

- [6] L. Chaari, S. Badillo, Th. Vincent, G. Dehaene-Lambertz, F. Forbes, and **P. Ciuciu**, “Subject-level joint parcellation-detection-estimation in fMRI,” submitted to IEEE Trans. Med. Imag., IRIT Toulouse & CEA/NeuroSpin & INRIA Saclay and INRIA Grenoble, Jan. 2016.

## 5 Book chapters (since 2013)

- [1] **P. Ciuciu**, F. Forbes, T. Vincent, and L. Chaari, “Joint detection-estimation in functional MRI,” in *Regularization and Bayesian Methods for Inverse Problems in Signal and Image Processing*, Jean-François Giovannelli and Jérôme Idier, Eds., pp. 169–199. ISTE-Wiley, Feb. 2015.
- [2] J.-B. Poline, **P. Ciuciu**, A. Roche, and B. Thirion, “Intra and inter subject analyses of brain functional Magnetic Resonance Images (fMRI),” in *Handbook of Biomedical Imaging*, Nikos Paragios, James Duncan, and Nicholas Ayache, Eds. Springer US, 2015.
- [3] **P. Ciuciu**, F. Forbes, T. Vincent, and L. Chaari, “Détection-estimation conjointe en IRM fonctionnelle,” in *Méthodes d’inversion appliquées au traitement du signal et de l’image*, J.-F. Giovannelli and J. Idier, Eds. Hermes Science Publishing, Sep. 2013, To appear.
- [4] **P. Ciuciu**, *Méthodes markoviennes en estimation spectrale non paramétrique. Applications en imagerie radar Doppler*, Éditions universitaires européennes, July 2013, ISBN 978-613-1-56588-5.

## 6 Communications in peer-reviewed international conferences (since 1999)

- [1] P.-A. Comby, Z. Amor, A. Vignaud, and **P. Ciuciu**, “Denoising of fMRI volumes using local low rank methods,” *submitted to 20th IEEE International Symposium on Biomedical Imaging (ISBI)*, CEA/NeuroSpin, Inria-CEA MIND, Saclay, France, Nov. 2022.
- [2] S. Farrens, A. Grigis, Z. El Gueddari, L. Ramzi, Chaithya G R, S. Starck, **P. Ciuciu**, and J.-L. Starck, “PySAP: From Galaxies to Brains and Beyond,” in *Astronomical Society of the Pacific Conference Series*, July 2022, vol. 532, p. 77.
- [3] Chaithya G R, Z. Ramzi, and **P. Ciuciu**, “Hybrid learning of non-Cartesian k-space trajectory and MR image reconstruction networks,” in *19th International Symposium on Biomedical Imaging*, Kolkata, India, Mar. 2022, (oral presentation).
- [4] Kumari Pooja, Chaithya G R, Z. Ramzi, and **P. Ciuciu**, “MC-PDNet: Deep Unrolled Neural Network for Multi-contrast MR Image Reconstruction from Undersampled k-space data,” in *19th International Symposium on Biomedical Imaging*, Kolkata, India, Mar. 2022.



- [5] Z. Ramzi, F. Mannel, S. Bai, J.-L. Starck, **P. Ciuciu**, and T. Moreau, “SHINE: SHaring the INverse Estimate from the forward pass for bi-level optimization and implicit models,” in *International Conference on Learning Representations (ICLR)*, Jan. 2022, (oral presentation).
- [6] Chaithya G R, Z. Ramzi, and **P. Ciuciu**, “Learning the sampling density in 2D SPARKLING MRI acquisition for optimized image reconstruction,” in *29th European Signal Processing Conference (EUSIPCO)*, Dublin, Ireland, Sep. 2021, pp. 960–964.
- [7] Z. Ramzi, **P. Ciuciu**, and J.-L. Starck, “Density Compensated Unrolled Networks for Non-Cartesian MRI Reconstruction,” in *18th International Symposium on Biomedical Imaging*, Nice, France, Apr. 2021, pp. 1443–1447.
- [8] Z. Ramzi, B. Remy, F. Lanusse, J.-L. Starck, and **P. Ciuciu**, “Denoising score-matching for uncertainty quantification in inverse problems,” in *NeurIPS workshop on Deep Learning for Inverse Problems*, Virtual event, Dec. 2020, pp. 1–8, (oral presentation).
- [9] Z. Ramzi, J.-L. Starck, T. Moreau, and **P. Ciuciu**, “Wavelets in the deep learning era,” in *28th European Signal Processing Conference (EUSIPCO)*, Amsterdam, Netherlands (virtual), Jan. 2021, pp. 1417–1421, Paper id 1806.
- [10] J.-M. Lin, M. Jacob, Z. Saghi, **P. Ciuciu**, and J.-L. Starck, “PySAP-ComSET: an accelerated python package for compressed sensing electron tomography (CS-ET) reconstruction,” in *the 8th International Workshop on OpenCL, SYSCL, Vulkan and SPIR-V*, Munich, Germany, Apr. 2020.
- [11] Z. Ramzi, **P. Ciuciu**, and J.-L. Starck, “Benchmarking deep nets MRI reconstruction models on the FastMRI publicly available dataset,” in *17th International Symposium on Biomedical Imaging*, Iowa City, IO, USA (virtual), Apr. 2020, pp. 1441–1445.
- [12] H. Cherkaoui, T. Perret, A. Halimi, and **P. Ciuciu**, “fMRI BOLD signal decomposition using a multivariate low-rank model,” in *27th European Signal Processing Conference (EUSIPCO)*, La Corugna, Spain, Sep. 2019, pp. 1–5.
- [13] L. El Gueddari, E. Chouzenoux, J.-C. Pesquet, and **P. Ciuciu**, “Online MR image reconstruction for compressed sensing acquisition in  $T_2^*$  imaging,” in *Wavelets and Sparsity XVIII*. International Society for Optics and Photonics, Aug. 2019, vol. 11138, pp. 1113819–1–1113819–15, (oral presentation).
- [14] L. Jacob, M. El Gueddari, G. Navarro, M.-C. Cyrille, P. Bayle-Guillemaud, **P. Ciuciu**, and Z. Saghi, “Statistical machine learning and compressed sensing approaches for analytical electron tomography - application to phase change materials,” in *Microsc. Microanal.*, Microscopy Society of America 2019, Ed., Aug. 2019, vol. 25 (Suppl. 2), pp. 156–157.
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- [16] S. Makni, **P. Ciuciu**, J. Idier, and J.-B. Poline, “Détection-estimation conjointe de l’activité cérébrale en imagerie fonctionnelle (IRMf),” in *Actes du 20<sup>e</sup> colloque GRETSI*, Sep. 2005, pp. 295–298.

- [17] **P. Ciuciu**, J. Idier, G. Flandin, and J.-B. Poline, “Estimation régularisée et non supervisée de la fonction de réponse hémodynamique en imagerie cérébrale fonctionnelle (IRMf),” in *Actes du 19<sup>e</sup> colloque GRETSI*, Sep. 2003, pp. 312–315.
- [18] **P. Ciuciu**, J. Idier, and J.-F. Giovannelli, “Estimation spectrale régularisée de fouillis et de cibles en imagerie radar Doppler,” in *Actes du 18<sup>e</sup> colloque GRETSI*, Toulouse, France, Sep. 2001, pp. 479–482.
- [19] **P. Ciuciu**, J. Idier, and J.-F. Giovannelli, “Analyse spectrale non paramétrique haute résolution,” in *Actes du 17<sup>e</sup> colloque GRETSI*, Vannes, France, Sep. 1999, pp. 721–724.
- [20] J. Idier, J.-F. Giovannelli, and **P. Ciuciu**, “Interprétation régularisée des périodogrammes et extensions non quadratiques,” in *Actes du 16<sup>e</sup> colloque GRETSI*, Grenoble, France, Sep. 1997, pp. 695–698.

## 8 Abstracts in peer-reviewed international conferences (since 2002)

- [1] Chaithya G R, G. Daval-Frérôt, A. Massire, A. Vignaud, and **P. Ciuciu**, “Merging Cartesian and non-Cartesian sampling through GoLF-SPARKLING,” *submitted to 31th annual ISMRM meeting*, CEA/NeuroSpin, Inria-CEA MIND, Saclay, France, Nov. 2022, Abstract 2910.
- [2] G. Daval-Frérôt, Chaithya G R, F. Ponce, A. Massire, B. Mailhe, M. Nadar, A. Vignaud, and **P. Ciuciu**, “Benchmarking common and advanced non-Cartesian trajectories with high acceleration and static off-resonance effects,” *submitted to 31th annual ISMRM meeting*, CEA/NeuroSpin, Inria-CEA MIND, Saclay, France, Nov. 2022, Abstract 6501.
- [3] Z. Amor, C. Le Ster, Chaithya G R, G. Daval-Frérôt, B. Thirion, N. Boulant, A. Massire, F. Mirkes, **P. Ciuciu**, and A. Vignaud, “Impact of  $B_0$  field imperfections correction on BOLD sensitivity in 3D-SPARKLING fMRI data,” *submitted to 31th annual ISMRM meeting*, CEA/NeuroSpin, Inria-CEA MIND, Saclay, France, Nov. 2022, Abstract 2073.
- [4] P.-A. Comby, Z. Amor, A. Vignaud, and **P. Ciuciu**, “Benchmarking local low rank denoising methods for task-based fMRI data analysis,” *submitted to 31th annual ISMRM meeting*, CEA/NeuroSpin, Inria-CEA MIND, Saclay, France, Nov. 2022, Abstract 3216.
- [5] A. Artiges, É. Granier, I. Uszynski, F. Mauconduit, **P. Ciuciu**, and C. Poupon, “A diffusion-weighted MRI pulse sequence development toolbox in the open source GinkgoSequence framework,” *submitted to 31th annual ISMRM meeting*, CEA/NeuroSpin, Inria-CEA MIND, Saclay, France, Nov. 2022, Abstract 3486.
- [6] M. Dumeur, S. H. Wang, **P. Ciuciu**, and M. Palva, “Multifractal scaling in the Landau-Ginzburg theory for cortical dynamics,” in *Brain Criticality Hybrid Meeting*, National Institutes of Health, Bethesda, Maryland, USA, Nov. 2022.

- [7] G. Biagi, **P. Ciuciu**, and Z. Saghi, “Deep learning approaches for electron tomography under limited data acquisition conditions,” in *8th World Congress on Mechanical, Chemical, and Material Engineering (MCM’22)*, Prague, Czech Republic, Aug. 2022.
- [8] Z. Amor, Chaithya G R, G. Daval-Fr  rot, B. Thirion, F. Mauconduit, **P. Ciuciu**, and A. Vignaud, “3D-SPARKLING for functional MRI: A pilot study for retinotopic mapping at 7T,” in *28th Proc. OHBM*, Glasgow, UK, June 2022, Poster WTh931.
- [9] Chaithya G R and **P. Ciuciu**, “Benchmarking learned non-Cartesian k-space trajectories and reconstruction networks,” in *30th Proc. ISMRM*, London, UK, May 2022, number 3308.
- [10] Chaithya G R, G. Daval-Fr  rot, A. Massire, B. Mailhe, M. Nadar, A. Vignaud, and **P. Ciuciu**, “MORE-SPARKLING: Non-Cartesian trajectories with Minimized Off-Resonance Effects,” in *30th Proc. ISMRM*, London, UK, May 2022, number 1435.
- [11] Z. Amor, Chaithya G R, C. Le Ster, G. Daval-Fr  rot, N. Boulant, F. Mauconduit, C. Mirkes, **P. Ciuciu**, and A. Vignaud, “ $B_0$  field distortions monitoring and correction for 3D non-Cartesian fMRI acquisitions using a field camera: Application to 3D-SPARKLING at 7T,” in *30th Proc. ISMRM*, London, UK, May 2022, number 2822.
- [12] Z. Amor, Chaithya G R, B. Daval-Fr  rot, G. Thirion, F. Mauconduit, C. Mirkes, **P. Ciuciu**, and A. Vignaud, “Prospects of non-Cartesian 3D-SPARKLING encoding for functional MRI: A preliminary case study for retinotopic mapping,” in *30th Proc. ISMRM*, London, UK, May 2022, number 2823.
- [13] R. Baptista, A. Vignaud, Chaithya G R, G. Daval-Fr  rot, F. Mauconduit, M. Naudin, M. Lapert, R. Guillevin, **P. Ciuciu**, C. Lerman-Rabrait, and F. Boumezbeur, “Evaluation of 3D SPARKLING readout for Sodium UTE MRI at ultra-high magnetic field,” in *30th Proc. ISMRM*, London, UK, May 2022.
- [14] A. Artiges, F. Mauconduit, I. Uszynski, B. Mulo  t, E. Chaillou, **P. Ciuciu**, and C. Poupon, “A novel modular and Open Source MRI pulse sequence development framework dedicated to MRI systems,” in *30th Proc. ISMRM*, London, UK, May 2022.
- [15] H. Cherkaoui, T. Moreau, **P. Ciuciu**, B. Fernandez, M. Bottlaender, N. Tournier, and C. Leroy, “Characterization of the haemodynamic response function after a buprenorphine challenge study in human healthy volunteer,” in *27th Proc. OHBM*, Virtual, June 2021.
- [16] A. Waguet, T. Druet, O. Mesnil, and **P. Ciuciu**, “Nonlinear compressed sensing applied to guided wave tomography for the reconstruction of corrosion in structural health monitoring applications,” in *QNDE 2201*, Virtual, July 2021, number 75121.
- [17] Z. Ramzi, **P. Ciuciu**, and J.-L. Starck, “XPDNet for MRI reconstruction: An application to the 2020 fastMRI challenge,” in *29th Proc. ISMRM*, virtual, May 2021, number 0275.

- [18] Z. Ramzi, **P. Ciuciu**, A. Vignaud, and J.-L. Starck, “Is good old GRAPPA dead?,” in *29th Proc. ISMRM*, virtual, May 2021, number 1168.
- [19] G. Daval-Fr  rot, A. Massire, M. Ripart, B. Mailhe, M. Nadar, A. Vignaud, and **P. Ciuciu**, “Off-resonance correction non-Cartesian SWI using internal field map estimation,” in *29th Proc. ISMRM*, virtual, May 2021, number 3551.
- [20] B. Riemenschneider, M. Muckley, A. Radmanesh, S. Kim, G. Jeong, J. Ko, H. Shin, D. Hwang, M. Mostapha, S. Arberet, D. Nickel, Z. Ramzi, **P. Ciuciu**, J.-L. Starck, J. Teuwen, D. Karkaloulos, C. Zhang, A. Sriram, Z. Huang, N. Yakubova, Y. W. Lui, and F. Knoll, “Results of the 2020 fastMRI Brain Reconstruction Challenge,” in *29th Proc. ISMRM*, virtual, May 2021, number 0063.
- [21] M. Dumeur, **P. Ciuciu**, V. van Wassenhove, and P. Abry, “Pymultifrac: a python wavelet leader multifractal toolbox for assessing scale-free activity in brain signals,” in *LiveMEEG – Good Scientific Practices in EEG and MEG research*, Virtual, Oct. 2020.
- [22] H. Cherkaoui, T. Moreau, A. Halimi, C. Leroy, and **P. Ciuciu**, “Data-driven haemodynamic response function estimation: a semi-blind multivariate deconvolution of the fMRI signal,” in *26th Proc. OHBM*, Virtual, June 2020.
- [23] A. Massire, C. Giliyar-Radhakrishna, E. El Gueddari, F. Mauconduit, C. Lazarus, M. Ripart, P. Brugi  res, **P. Ciuciu**, and A. Vignaud, “Compressed sensing accelerated susceptibility-weighted imaging at 3T with SPARKLING: looking for favorable parametrization,” in *28th Proc. ISMRM*, Paris, France, Aug. 2020.
- [24] M. Jacob, J.-M Lin, **P. Ciuciu**, P. Bayle-Guillemaud, and Z. Saghi, “PySAP-ComSET: a Python toolbox for compressed sensing approaches in electron tomography,” in *European Microscopy Conference*, Aug. 2020, pp. –.
- [25] L. El Gueddari, C. Giliyar Radhakrishna, Z. Ramzi, S. Farrens, S. Starck, A. Grigis, J.-L. Starck, and **P. Ciuciu**, “PySAP-MRI: A Python package for MR image reconstruction,” in *ISMRM workshop on Data Sampling and Image Reconstruction*, Sedona, AZ, United States, Jan. 2020, (oral presentation).
- [26] J.-M. Lin, G. Kowalik, J. Montalt Tordera, B. Sarthou, **P. Ciuciu**, J. Steeden, and V. Muthurangu, “Application of memory reduced NUFFT to multi-dimensional non-Cartesian MRI,” in *27th Proc. ISMRM*, Montreal, QC, Canada, May 2019, number 822.
- [27] L. El Gueddari, E. Chouzenoux, J.-C. Pesquet, A. Vignaud, and **P. Ciuciu**, “Online compressed sensing MR image reconstruction for high resolution  $T_2^*$  imaging,” in *27th Proc. ISMRM*, Montreal, QC, Canada, May 2019, number 4655.
- [28] L. El Gueddari, E. Chouzenoux, J.-C. Pesquet, A. Vignaud, and **P. Ciuciu**, “OSCAR-based reconstruction for compressed sensing and parallel MR imaging,” in *27th Proc. ISMRM*, Montreal, QC, Canada, May 2019, number 1049.

- [29] C. Lazarus, P. Weiss, L. El Gueddari, F. Mauconduit, A. Vignaud, and **P. Ciuciu**, “3D SPARKLING for accelerated ex vivo T2\*-weighted MRI with compressed sensing,” in *27th Proc. ISMRM*, Montreal, QC, Canada, May 2019, number 426, (oral presentation as finalist of the I.I. Rabi ISMRM young investigator award).
- [30] J.-M. Lin and **P. Ciuciu**, “Minimum-variance weighted image reconstruction and the application to MRI,” in *26th Proc. ISMRM*, Paris, France, June 2018.
- [31] L. El Gueddari, C. Lazarus, H. Carrié, A. Vignaud, and **P. Ciuciu**, “Self-calibrating nonlinear MR image reconstruction algorithms for variable density sampling and parallel reception MRI,” in *26th Proc. ISMRM*, Paris, France, June 2018.
- [32] C. Lazarus, P. Weiss, L. El Gueddari, F. Mauconduit, A. Vignaud, and **P. Ciuciu**, “Distribution-controlled and optimally spread non-Cartesian sampling curves for accelerated in vivo brain imaging at 7 Tesla,” in *26th Proc. ISMRM*, Paris, France, June 2018.
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- [35] A. Frau-Pascual, T. Perret, S. Bougacha, F. Forbes, and **P. Ciuciu**, “Advanced statistical analysis of functional Arterial Spin Labelling data,” in *23rd Proc. OHBM*, Vancouver, Canada, June 2017.
- [36] C. Lazarus, P. Weiss, N. Chauffert, F. Mauconduit, M. Bottlaender, A. Vignaud, and **P. Ciuciu**, “SPARKLING: Novel non-Cartesian sampling schemes for accelerated 2D anatomical imaging at 7T using Compressed Sensing,” in *25th Proc. ISMRM*, Honolulu, Hawaii (USA), Apr. 2017.
- [37] A. Coste, N. Chauffert, F. Boumezbeur, A. Vignaud, **P. Ciuciu**, G. Madelin, K. Reetz, D. Le Bihan, C. Lerman, and S. Romanzetti, “Improving Sodium concentration measurements using sub-sampled non-Cartesian trajectories and non-linear iterative reconstruction algorithm,” in *25th Proc. ISMRM*, Honolulu, Hawaii (USA), Apr. 2017.
- [38] D. La Rocca, D. A. Engemann, V. van Wassenhove, and **P. Ciuciu**, “Correlates of perceptual learning in MEG functional connectivity analysis,” in *BrainModes 2016*, Brussels, Belgium, Dec. 2016.
- [39] C. Lazarus, A. Coste, N. Chauffert, A. Vignaud, and **P. Ciuciu**, “Compressed sensing in MRI: how the maximum undersampling factor depends on the image size,” in *33th Proc. ESMRMB*, Vienna, Austria, Oct. 2016.

- [40] C. Lazarus, A. Coste, N. Chauffert, A. Vignaud, and **P. Ciuciu**, “Compressed sensing in MRI: how the maximum undersampling factor depends on the image size and the SNR,” in *SFB Workshop: Imaging with modulated/incomplete data*, Graz, Austria, Sep. 2016.
- [41] **P. Ciuciu**, H. Pellé, M. Rahim, E. Dohmatob, P. Abry, and V. van Wassenhove, “Multivariate Hurst exponent estimation in fMRI. Application to brain decoding of perceptual learning,” in *22nd Proc. OHBM*, Geneva, Switzerland, June 2016.
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- [43] A. Coste, A. Vignaud, **P. Ciuciu**, F. Boumezbeur, A. Amadon, F. Mauconduit, S. Romanzetti, D. Le Bihan, and C. Lerman, “ $^{31}\text{P}$  MR imaging and concentration measurements,” in *24th Proc. ISMRM*, Singapore, May 2016.
- [44] A. Coste, N. Chauffert, A. Vignaud, F. Boumezbeur, **P. Ciuciu**, P. Weiss, S. Romanzetti, D. Le Bihan, and C. Lerman, “ $^{31}\text{P}$  MRI: Comparison of image reconstruction approaches for sub-Nyquist acquisitions at ultra high field,” in *32th Proc. ESMRMB*, Edinburgh, UK, Oct. 2015.
- [45] R. Becker, **P. Ciuciu**, V. van Wassenhove, D. Van de Ville, and A. Kleinschmidt, “Alpha oscillations modulate  $1/f$  slope of slow spontaneous brain activity,” in *21th Proc. OHBM*, Honolulu, USA, June 2015.
- [46] **P. Ciuciu**, P. Abry, and B. J. He, “Interplay between scale-free dynamics and functional connectivity in intrinsic fMRI networks,” in *BrainModes 2013 Symposium*, Amsterdam, The Netherlands, Dec. 2013, Elsevier.
- [47] S. Badillo, T. Vincent, G. Dehaene-Lambertz, and **P. Ciuciu**, “The contribution of the multisession joint detection-estimation model to language processing studies,” in *19th Proc. OHBM*, Seattle, USA, June 2013, Elsevier.
- [48] P. Abry, N. Zilber, A. Gramfort, V. van Wassenhove, and **P. Ciuciu**, “Beyond oscillations: Are scale-free dynamics of magnetoencephalography (MEG) signals markers of neural plasticity?,” in *SFN 2012*, New Orleans, USA, Oct. 2012, (oral presentation).
- [49] N. Zilber, **P. Ciuciu**, A. Gramfort, and V. van Wassenhove, “Acoustic textures and visual motion act in concert: metamodal plasticity observed with MEG,” in *SFN 2012*, New Orleans, USA, Oct. 2012.
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- [53] T. Vincent, L. Chaari, C. Bakhous, S. Badillo, and **P. Ciuciu**, “Pyhrf: hemodynamics-centered fMRI data analyses,” in *Medical Analysis Workshop, 9th Proc. ISBI*, Barcelona, Spain, 2012, (oral presentation).
- [54] L. Risser, T. Vincent, F. Forbes, J. Idier, and **P. Ciuciu**, “How to deal with brain deactivations in the joint detection-estimation framework?,” in *16th Proc. OHBM*, D. Le Bihan, Ed., Barcelona, Spain, June 2010, Elsevier.
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- [57] T. Vincent, A. Tucholka, and **P. Ciuciu**, “Surface-based joint detection-estimation of brain activity in functional MRI,” in *16th Proc. OHBM*, D. Le Bihan, Ed., Barcelona, Spain, June 2010, Elsevier, (oral presentation).
- [58] **P. Ciuciu**, S. Desmidt, T. Vincent, S. Roger, B. Thirion, and A. Roche, “What is the statistical difference between SPM5 and the BrainVISA fMRI toolbox?,” in *16th Proc. OHBM*, D. Le Bihan, Ed., Barcelona, Spain, June 2010, Elsevier.
- [59] L. Favre, A.-L. Fouque, T. Vincent, A. Tucholka, M. Keller, G. Operto, B. Thyreau, C. Clouchoux, L. Risser, A. Moreno, D. Geffroy, Y. Cointepas, O. Coulon, **P. Ciuciu**, B. Thirion, and A. Roche, “A comprehensive fMRI processing toolbox for brainvisa,” in *15th Proc. OHBM*, San Francisco, CA, USA, June 2009.
- [60] T. Vincent, L. Risser, J. Idier, and **P. Ciuciu**, “Spatially adaptive mixture modelling for analysis of fMRI time series,” in *15th Proc. OHBM*, San Francisco, CA, USA, June 2009.
- [61] L. Chaari, **P. Ciuciu**, A. Benazza-Benyahia, and J.-C. Pesquet, “Performance of three parallel MRI reconstruction methods in the presence of coil sensitivity map errors,” in *17th Proc. ISMRM*, Honolulu, USA, Apr. 2009.



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- [63] C. Rabrait, **P. Ciuciu**, A. Ribès, C. Poupon, G. Dehaene-Lambertz, P. Leroux, D. Le Bihan, and F. Lethimonnier, “Regularized localized parallel EVI: application to the study of habituation effects in fMRI,” in *16th Proc. ISMRM*, Toronto, Canada, May 2008.
- [64] C. Rabrait, **P. Ciuciu**, A. Ribès, C. Poupon, P. Leroux, D. Le Bihan, and F. Lethimonnier, “Localized parallel echo volume imaging at 1.5T: a first extensive fMRI study,” in *15th Proc. ISMRM*, May 2007, (oral presentation).
- [65] T. Vincent, **P. Ciuciu**, and J. Idier, “Whole brain validation of spatial mixture modelling for the joint detection-estimation of brain activity in fMRI,” in *13th Proc. OHBM*, Chicago, IL, June10–14 2007.
- [66] **P. Ciuciu**, P. Abry, and C. Rabrait, “Leader-based multifractal analysis of EVI fMRI time series: evidence of scaling phenomenae in a language comprehension study,” in *13th Proc. OHBM*, Chicago, IL, June10–14 2007.
- [67] C. Rabrait, **Ciuciu, P.**, C. Poupon, D. Le Bihan, and F. Lethimonnier, “Temporal analysis of the BOLD response using high temporal resolution Echo Volumar Imaging,” in *14th Proc. ISMRM*, May 2006, (oral presentation).
- [68] **P. Ciuciu**, J. Idier, and S. Sockeel, “Modeling non-linear and non-stationary effects of the BOLD response using mixture models in fMRI,” in *12th Proc. OHBM*, Florence, Italy, June 11-15 2006.
- [69] S. Makni, **P. Ciuciu**, J. Idier, and J.-B. Poline, “Anatomically informed joint detection-estimation of brain activity,” in *12th Proc. OHBM*, Florence, Italy, June 11-15 2006.
- [70] A. Botzung, **Ciuciu, P.**, E. Denkova, and L. Manning, “The neural bases of the constructive nature of autobiographical memories studied with a self-paced fMRI design,” in *12th Proc. OHBM*, Florence, Italy, June 2006.
- [71] S. Makni, Ch. Grova, **P. Ciuciu**, and J.-B. Poline, “An interpolation method for fMRI data extraction on the cortical surface,” in *11th Proc. OHBM*, Toronto, Canada, June 2005.
- [72] **P. Ciuciu**, Ch. Pallier, B. Thirion, , S. Mériaux, G. Dehaene-Lambertz, and S. Dehaene, “Hemodynamic response estimation in auditory sentence repetition,” in *11th Proc. OHBM*, Toronto, Canada, June 2005.
- [73] S. Donnet, M. Lavielle, **P. Ciuciu**, and J.-B. Poline, “BOLD single-trial variability and model selection,” in *10th Proc. OHBM*, Budapest, Hungary, June 2004.

- [74] S. Makni, **P. Ciuciu**, J. Idier, and J.-B. Poline, “A region-based method for the estimation of the neural impulse response in event-related fMRI,” in *10th Proc. OHBM*, Budapest, Hungary, June 2004.
- [75] **P. Ciuciu**, J. Idier, A. Roche, G. Flandin, G. Marrelec, and J.-B. Poline, “On the spatial variability of the BOLD HRF and some regularization strategies,” in *9th Proc. OHBM*, New York, USA, June 2003.
- [76] **P. Ciuciu**, J. Marrelec, G. Idier, J.-B. Poline, and H. Benali, “A general tool to estimate the hemodynamic response function in fMRI data,” in *8th Proc. OHBM*, Sendai, Japan, June 2002.

## 9 Invited talks and seminars (since 2002)

- [1] **P. Ciuciu**, “Perfecting Brain Scans: New Horizons,” Heraklion, Greece, July 2022, 13th FORTH scientific retreat.
- [2] **P. Ciuciu**, “Perfecting Brain Scans: New Horizons,” Lausanne, Switzerland, June 2022, EPFL.
- [3] **P. Ciuciu**, “Learning Based Non-Cartesian Hardware Compliant Sampling Trajectories for Accelerated MRI: Beyond Compressed Sensing Theory,” Virtual, Mar. 2022, SIAM Imaging Science conference.
- [4] **P. Ciuciu** and Z. Saghi, “Compressed Sensing for Imaging,” MINATEC/CEA Grenoble, France, Nov. 2021, CEA: Key note of the Transverse Working Program on Numerical Simulation and AI.
- [5] **P. Ciuciu**, “Accelerated non-Cartesian MR imaging: From shorter data acquisition to faster image reconstruction,” Aalto University, Finland, Nov. 2021, ABC Seminar: Human brain imaging.
- [6] **P. Ciuciu**, “Functional Connectivity in the Infra-slow Human Brain Activity in MEG,” Helsinki, Finland, Nov. 2021, Neuroscience Center (HiLIFE, University of Helsinki).
- [7] **P. Ciuciu**, “Accelerated MR imaging: from shorter data acquisition to faster image reconstruction,” La Timone Hospital, Marseille, France, Oct. 2021, French Ultra-high field Network.
- [8] **P. Ciuciu**, “Accelerated MR imaging: from shorter data acquisition to faster image reconstruction,” Marseille (virtual), France, Jan. 2021, Aix-Marseille Université.
- [9] **P. Ciuciu**, “Accelerated MR imaging: from shorter data acquisition to faster image reconstruction,” Gif-sur-Yvette (virtual), France, Dec. 2020, CEA/NeuroSpin seminars.
- [10] **P. Ciuciu**, “Online MR image reconstruction for compressed sensing acquisition in  $T_2^*$  imaging,” Gif-sur-Yvette (virtual), France, Oct. 2020, L2S– CNRS– Supélec – Université Paris-Saclay.

- [11] **P. Ciuciu**, “Emergence of  $\beta$  and  $\gamma$  networks following multisensory training,” Helsinki, Finland, Feb. 2020, Neuroscience Center, University of Helsinki.
- [12] **P. Ciuciu**, “SPARKLING: variable-density k-space filling curves for accelerated T2\*-weighted MRI,” Sophia-Antipolis, France, Oct. 2019, Inria Sophia-Antipolis, Université Côte d’Azur.
- [13] **P. Ciuciu**, “Online MR image reconstruction for compressed sensing acquisition in  $T_2^*$  imaging,” Sophia-Antipolis, France, Oct. 2019, I3S – CNRS.
- [14] **P. Ciuciu**, “Online MR image reconstruction for compressed sensing acquisition in  $T_2^*$  imaging,” San Diego, CA, USA, Aug. 2019, SPIE in Optics & Photonics: workshop on Wavelets and Sparsity XVIII. Special session on «Inverse problems in MRI».
- [15] **P. Ciuciu**, “Apprentissage profond pour la reconstruction d’images IRM acquises sous forme comprimée,” Paris, France, Apr. 2019, Collège de France.
- [16] **P. Ciuciu**, “SPARKLING: variable-density k-space filling curves for accelerated T2\*-weighted MRI,” Geneva, Switzerland, Feb. 2019, Geneva University Hospital.
- [17] **P. Ciuciu**, “SPARKLING: variable-density k-space filling curves for accelerated T2\*-weighted MRI,” Edinburgh, UK, Nov. 2018, Heriot-Watt University, School of Engineering and Physical Sciences.
- [18] **P. Ciuciu**, “Distribution-controlled and optimally spread sampling trajectories for accelerated Magnetic Resonance Imaging,” Cachan, France, May 2018, 8th International Conference on New Computational Methods for Inverse Problems.
- [19] **P. Ciuciu**, “Statistical modeling and Bayesian inference of functional ASL data,” Paris, France, Mar. 2018, St Anne Hospital & Inserm Centre Psychiatrie et Neurosciences, IMABRAIN meeting.
- [20] **P. Ciuciu**, “Multifractal Analysis of Neural Activity in MEG reveals Convergence to a Learning-predictive Cortical Regime,” Montreal, QU, Canada, Dec. 2017, Perform Centre, Concordia University.
- [21] **P. Ciuciu**, “Prospective SPARKLING trajectories for accelerated 2D high resolution MRI at 7 Tesla,” Montreal, QU, Canada, Dec. 2017, École Polytechnique de Montreal.
- [22] **P. Ciuciu**, “Prospective SPARse K-space sampLING (SPARKLING) for accelerated 2D anatomical imaging at 7 Tesla,” Nice, France, Sep. 2017, Manifold learning workshop, H2020 Dedale workshop.
- [23] **P. Ciuciu**, “Multifractal Analysis of Neural Activity (MEG) Reveals Convergence to an Optimal Cortical Regime That Predicts Learning,” Laufer Center Lecture Hall, Stony Brook, NY, USA, May 2017, Univ. of Stony Brook.
- [24] **P. Ciuciu**, “Convergence of Neural Activity (MEG) to Asymptotic Multifractal Dynamics in MEG Predicts Learning,” Langone Health center, NYC, USA, May 2017, NYU, School of Medicine.

- [25] **P. Ciuciu**, “Sparkling: Novel non-Cartesian sampling schemes for accelerated 2D anatomical imaging at 7 Tesla,” Vancouver, Canada, Dec. 2016, IEEE lecture, Univ. British Columbia.
- [26] **P. Ciuciu**, “Convergence of neural activity to multifractal attractors in MEG predicts learning,” Avignon, France, Sep. 2016, GDR of Multifractal Analysis.
- [27] **P. Ciuciu**, “Impact of perceptual learning on resting-state fMRI connectivity: A supervised classification study,” Budapest, Hungary, Aug. 2016, EUSIPCO conference: Special session on unraveling brain networks from functional neuroimaging data.
- [28] **P. Ciuciu**, “Compressive sensing for MRI,” Rennes, France, 21 June 2016, INRIA Bretagne Atlantique.
- [29] **P. Ciuciu**, “New physically plausible compressive sampling schemes for MRI: First results at 7 tesla,” Valbonne, France, 17 June 2016, INRIA Sophia-Antipolis.
- [30] **P. Ciuciu**, “Convergence to asymptotic multifractal dynamics in MEG predicts learning,” Geneva, Switzerland, 3 May 2016, University of Geneva - Campus BioTech.
- [31] **P. Ciuciu**, “On the generation of physically plausible  $k$ -space trajectories: from simulations to real acquisitions,” Palaiseau, France, 23 Mar. 2016, CEA visiting committee on High Performance Computing.
- [32] **P. Ciuciu**, “Compressed sensing for high resolution MRI at 7 Tesla,” Grenoble, France, 8 Feb. 2016, GIN Inserm.
- [33] **P. Ciuciu**, “Compressed sensing for high resolution MRI at 7 Tesla,” Gif-sur-Yvette, France, 5 Feb. 2016, Workshop on the 7 Tesla magnet, NeuroSpin.
- [34] **P. Ciuciu**, “On the generation of compressed sampling schemes in MRI,” Gif-sur-Yvette, France, 28 Jan. 2016, Cosmostat lab, IRFU/CEA.
- [35] **P. Ciuciu**, “Complexity measures in brain activity: The functional role of scale-free brain dynamics,” Jean-Kuntzmann lab., Grenoble, France, 8 Dec. 2015, IXXI Rhône-Alpes.
- [36] **P. Ciuciu**, “Convergence to asymptotic multifractal dynamics predicts learning,” Paris, France, 13 Mar. 2015, European Institute of Theoretical Neuroscience.
- [37] **P. Ciuciu**, A. Frau-Pascual, Th. Vincent, and F. Forbes, “Physiologically informed Bayesian analysis of ASL fMRI data,” GIPSA Lab, Grenoble, France, 5 Dec. 2014, Workshop on challenges in multimodality, CHES ERC project.
- [38] **P. Ciuciu**, “Joint detection-estimation of brain activity in fMRI,” Toulouse, France, 14 Nov. 2014, Atelier restauration d’images CNES.

- [39] **P. Ciuciu** and S. Badillo, “Multi-subject Bayesian joint detection and estimation in fMRI,” University of Warwick, Coventry, UK, 5 Sep. 2014, NeuroStats workshop.
- [40] **P. Ciuciu**, N. Chauffert, and P. Weiss, “An accelerated proximal gradient algorithm for gradient waveforms design in Magnetic Resonance Imaging,” University of Bristol, UK, 28 Aug. 2014, Workshop on High-dimensional Stochastic Simulation and Optimisation in Image Processing.
- [41] **P. Ciuciu**, “Scaling phenomena in brain activity: review, evidences, analysis and impact,” Banff, AL, Canada, 27 Feb. 2014, BIRS workshop: Multifractal Analysis: From Theory to Applications and Back.
- [42] **P. Ciuciu**, P. Abry N. Zilber, and V. van Wassenhove, “Convergence to asymptotic multifractal dynamics predicts learning,” Montreal, QB, Canada, 25 Oct. 2013, CRM, Univ. of Montreal. Scale-free dynamics & Functional Connectivity workshop.
- [43] **P. Ciuciu**, N. Chauffert, and P. Weiss, “Physically plausible compressed sensing schemes for MRI,” Lausanne, Suisse, 2 July 2013, École Polytechnique Fédérale de Lausanne.
- [44] **P. Ciuciu**, “VEM vs. MCMC inference for the joint detection estimation of brain activity in fMRI,” Toulouse, France, 24-28 June 2013, CIMI LabEx International workshop, université Paul Sabatier.
- [45] **P. Ciuciu**, “Compressed sensing in MRI,” Toulouse, France, 28 Jan. 2013, Séminaire du Centre International de Mathématique et d’Informatique de Toulouse, université Paul Sabatier.
- [46] **P. Ciuciu**, “MRI: from acquisition to reconstruction,” Toulouse, France, 14 Jan. 2013, Séminaire du Centre International de Mathématique et d’Informatique de Toulouse, université Paul Sabatier.
- [47] **P. Ciuciu**, “Modulation of scale-free properties of brain activity in MEG,” Paris, France, 28 Aug. 2012, 18ième congrès international Biomag.
- [48] **P. Ciuciu**, “Scale-free and multifractal time dynamics of fMRI signals during rest and task,” Gif-sur-Yvette, France, 15 June 2012, UNICOG Inserm/CEA U992 meeting, NeuroSpin.
- [49] **P. Ciuciu**, “Scale-free and multifractal time dynamics in the brain,” Créteil, France, 1er June 2012, SCAM, universités Paris XII & Paris-Est.
- [50] **P. Ciuciu**, “A VEM solution to the joint detection estimation of brain activity in fMRI,” Toulouse, France, Feb. 2012, Séminaire image IMT, université Paul Sabatier.
- [51] **P. Ciuciu**, “Multifractal properties of the fMRI signal during rest and task,” Bethesda, 20 Sep. 2011, NIH/NINDS/LFMI meeting.
- [52] **P. Ciuciu**, “Multifractal analysis of resting state networks in functional MRI,” Chicago, IL, USA, Mar. 2011, IEEE ISBI conference: special session on “Wavelets in EEG/fMRI”.

- [53] **P. Ciuciu**, “Image reconstruction from multiple sensors using Stein’s principle. Application to parallel MRI,” Chicago, IL, USA, Mar. 2011, IEEE ISBI conference: special session on “Wavelets in EEG/fMRI”.
- [54] **P. Ciuciu**, “Multifractal analysis of resting state networks in functional MRI,” Grenoble, France, Apr. 2011, GIPSA lab (CNRS).
- [55] **P. Ciuciu**, “Impact of the joint detection-estimation approach on group level analyses in fMRI,” Strasbourg, France, Nov. 2010, Université Louis Pasteur.
- [56] **P. Ciuciu**, “Impact of the parallel mri reconstruction algorithm on brain activity detection in fMRI,” Roma, France, Nov. 2010, IEEE ISABEL workshop.
- [57] **P. Ciuciu**, “Post-modern fMRI data analysis in parallel imaging,” Gif-sur-Yvette, France, 13 Sep. 2010, Séminaire NeuroSpin/CEA.
- [58] **P. Ciuciu**, “Bayesian joint detection estimation of brain activity in fMRI,” Sophia-Antipolis, France, 16 Dec. 2009, INRIA Sophia-Antipolis, équipe Asclepios.
- [59] **P. Ciuciu**, “Bayesian joint detection estimation of brain activity in fMRI,” Grenoble, France, 26 Nov. 2009, Séminaire de statistiques du laboratoire Jean Kuntzmann, INRIA Grenoble &, université Joseph Fourier.
- [60] **P. Ciuciu**, “Bayesian joint detection estimation of brain activity in fMRI,” Palaiseau, France, 24 Nov. 2009, CMAP, École Polytechnique.
- [61] **P. Ciuciu**, “Spatially adaptive mixture models for analysis of fmri time series,” Paris, France, Oct. 2009, GDR CNRS Stats-Santé, université Paris V.
- [62] **P. Ciuciu**, L. Chaari, and J.-C. Pesquet, “Unsupervised wavelet-based regularization in parallel MRI,” Porquerolles, France, 9 June 2009, OPTIMED (ANR project) closing workshop.
- [63] **P. Ciuciu**, “Extrapolation schemes for fast 3D Potts field partition function estimation. Application to fMRI image analysis,” Paris, France, 26 Mar. 2009, GDR CNRS ISIS, Télécom Paris-Tech.
- [64] **P. Ciuciu**, “Bayesian analysis of event-related fMRI data,” Oxford, United Kingdom, Sep. 2008, fMRIB, John Radcliffe hospital, Oxford university.
- [65] **P. Ciuciu**, P. Abry, and C. Rabrait, “Probing complexity in brain dynamics- a wavelet-based multifractal approach,” Montreal, Canada, June 2008, École Polytechnique de Montreal.
- [66] **P. Ciuciu**, “Bayesian contributions to the analysis of brain activity from fMRI data,” Montreal, Canada, June 2008, MITACS workshop on Signal Processing Methods in Brain Imaging.
- [67] **P. Ciuciu**, “Bayesian contributions to the joint detection-estimation of brain activity in fMRI,” Orsay, France, 17 Apr. 2008, INRIA Saclay, Select team.

- [68] **P. Ciuciu**, “Within-subject analysis of fMRI data analysis: advanced bold signal models,” Strasbourg, France, 5 Aug. 2005, Centre d’Études de Physiologie Appliquée, Unité CNRS UPS 858.
- [69] **P. Ciuciu** and J.-B. Poline, “Estimation de la fonction de réponse hémodynamique en IRM fonctionnelle,” Paris, France, June 2002, GdR ISIS.
- [70] **P. Ciuciu** and J.-B. Poline, “Haemodynamic response function estimation for any fMRI experiment,” London, United Kingdom, May 2002, Wellcome Department of Imaging NeuroScience.

## 10 Keynotes, tutorials and educational courses (since 2003)

- [1] **P. Ciuciu**, “New Trends in Acquisition and Reconstruction for Compressed Sensing MRI,” St Jacut de la Mer, France, June 2022, 14th IEEE EMBS Summer School on Biomedical Imaging.
- [2] **P. Ciuciu**, “Computational Magnetic Resonance Imaging,” Orsay, France, June 2022, Institut Pascal, Paris-Sclay University.
- [3] **P. Ciuciu**, “Recent advances in acquisition and reconstruction for Compressed Sensing MRI ,” Venice, Italy, Apr. 2019, Tutorial at the 16th IEEE International Symposium on Biomedical Imaging.
- [4] **P. Ciuciu**, “MRI reconstruction,” Strasbourg, France, Nov. 2016, IEEE NSSC & MIC conference.
- [5] **P. Ciuciu**, “Functional MRI: physiology, modeling, Bayesian inference and neurosciences,” Saint-Lary Soulan, France, 10-14 June 2013, école d’été du Centre International de Mathématique et d’Informatique de Toulouse, université Paul Sabatier, Toulouse.
- [6] **P. Ciuciu**, “Inverse problems in functional brain imaging,” Porquerolles, France, 6-10 May 2010, école de printemps CNRS GdR ISIS, Problèmes inverses en traitement des signaux et des images.
- [7] **P. Ciuciu**, “Inverse problems in functional brain imaging,” Peyresq, France, July 2009, 4ème école d’été CNRS GdR ISIS, Problèmes inverses en traitement des signaux et des images.
- [8] **P. Ciuciu**, “Identification of the hemodynamic response in fMRI (Part II): regionwise joint-detection estimation,” Marseille, France, 26 May 2009, JIRFNI’09 (Inserm).
- [9] **P. Ciuciu**, “Identification of the hemodynamic response in fMRI (Part I): voxelwise approaches,” Marseille, France, 26 May 2009, JIRFNI’09 (Inserm).
- [10] **P. Ciuciu** and T. Vincent, “Joint detection-estimation of brain activity from fMRI time series: the PyHRF package,” Télécom Paris-Tech, Paris, France, 18 Nov. 2008, JIRFNI’08 (Inserm).
- [11] **P. Ciuciu** and G. Marrelec, “Estimation and characterization of the hemodynamic response in fMRI,” Paris, France, 11 Sep. 2006, EEG/fMRI (CNRS/Inserm) summer school.

- [12] **P. Ciuciu**, “Modeling the BOLD response in fMRI,” in *MICCAI’04, Tutorials*, Saint-Malo, France, Sep. 2004.
- [13] **P. Ciuciu**, “Modélisation de la réponse hémodynamique en IRMf,” Marseille, France, 22-26 Nov. 2004, Journée de formation inter-régionale en neuroimagerie (Inserm).
- [14] **P. Ciuciu**, “Modélisation linéaire du signal BOLD,” Paris, France, 22 Sep. 2003, Journée d’analyse de données de neuroimagerie.
- [15] **P. Ciuciu**, “Analyse statistique des données d’IRMf,” Concarneau, France, Aug. 2003, École d’été (CNRS) Temps et Cerveau.

## 11 Patents (since 2011)

- [1] A Waguet, O. Mesnil, T. Druet, and **P. Ciuciu**, “Optimisation du placement d’un ensemble de capteurs de détection d’anomalie(s) dans une structure par tomographie à ondes guidées ,” Oct. 2022, MAM BFF 22P0348, French Patent office, Paris, France.
- [2] A Waguet, O. Mesnil, T. Druet, and **P. Ciuciu**, “Procédé d’optimisation bi-niveau de la localisation de capteurs de détection de défaut(s) dans une structure par tomographie à ondes élastiques guidées,” Oct. 2022, MAM BFF 22P0404, French Patent office, Paris, France.
- [3] G R Chaithya, G. Daval-Frerot, A. Vignaud, and **P. Ciuciu**, “Method and apparatus for performing accelerated Magnetic Resonance Imaging with reduced off-resonance effect,” Apr. 2022, Patent Application: Europe N° 22305592.2.
- [4] G. Daval-Frerot, A. Massire, M. Ripart, B. Mailhe, M. Nadar, A. Vignaud, and **P. Ciuciu**, “B0 field inhomogeneity estimation using internal phase maps from long single echo time MRI acquisition,” Apr. 2021, Patent Application: US 17/245,993.
- [5] N. Chauffert, **P. Ciuciu**, J. Kahn, C. Lazarus, A. Vignaud, and P. Weiss, “Method and apparatus for accelerated Magnetic Resonance Imaging,” Sep. 2017, US Patent App. 16/639,725.
- [6] L. Chaari, **P. Ciuciu**, J.-C. Pesquet, and S. Mériaux, “Method for performing parallel magnetic resonance imaging,” Mar. 2012, US Patent 10,551,461.

## 12 Research Contract Report (since 2008)

- [1] **P. Ciuciu** and F. Boumezbeur, “Effect of S 47445 on Default Mode Network functional connectivity assessed by a functional magnetic resonance imaging (fMRI) in resting state and during cognitive task. a double-blind, placebo-controlled cross-over randomised study in elderly healthy female



volunteers,” Rapport de contrat (confidentiel), Institut de Recherches Internationales SERVIER, CEA.DSV.I<sup>2</sup>BM.NeuroSpin, July 2015.

- [2] **P. Ciuciu** and F. Boumezbeur, “Effect of S 47445 on Default Mode Network functional connectivity assessed by a functional magnetic resonance imaging (fMRI) in resting state and during cognitive task,” Plan d’analyse statistique (confidentiel), Institut de Recherches Internationales SERVIER, CEA.DSV.I<sup>2</sup>BM.NeuroSpin, July 2013.
- [3] **P. Ciuciu**, T. Vincent, and S. Desmidt, “Effect of S 38093 on regional brain activity assessed by a functional magnetic resonance imaging (fMRI) during cognitive tasks. a double-blind, placebo-controlled cross-over randomised study in elderly healthy male volunteers,” Rapport de contrat (confidentiel), Institut de Recherches Internationales SERVIER, CEA.DSV.I<sup>2</sup>BM.NeuroSpin, Mar. 2012.
- [4] **P. Ciuciu** and A. Roche, “Effect of S 38093 on regional brain activity assessed by a functional magnetic resonance imaging (fMRI) during cognitive tasks. a double-blind, placebo-controlled cross-over randomised study in elderly healthy male volunteers,” Plan d’analyse statistique (confidentiel), Institut de Recherches Internationales SERVIER, CEA.DSV.I<sup>2</sup>BM.NeuroSpin, Apr. 2010.

## 13 Monographies (since 1996)

- [1] **P. Ciuciu**, *Titres et travaux pour le concours E5 du CEA*, Concours directeur de recherches, CEA.DSV, Fontenay aux Roses, France, January 2014.
- [2] **P. Ciuciu**, *Dynamique cérébrale en neuro-imagerie fonctionnelle*, Habilitation à diriger les recherches, Université de Paris-Sud, Orsay, France, 2008.
- [3] **P. Ciuciu**, *Méthodes markoviennes en estimation spectrale non paramétrique. Applications en imagerie radar Doppler*, Thèse de doctorat, Université de Paris-Sud, Orsay, France, October 2000.
- [4] **P. Ciuciu**, “Régularisation markovienne pour l’analyse spectrale non paramétrique. Application aux signaux de radars Doppler,” Mémoire de DEA Automatique et Traitement du Signal, Université de Paris-Sud, Gif-sur-Yvette, France, June 1996.