Publication List

October 7, 2022

1 Peer-reviewed journal articles

[1] G. Daval-Frérot, B. Massire, A. Mailhe, M. Nadar, A. Vignaud, and **P. Ciuciu**, "Iterative ΔB_0 field map estimation for off-resonance correction in non-Cartesian susceptibility weighted imaging," *Magnetic Resonance in Medicine*, vol. 88, pp. 1592–1607, 2022.

[2] 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.

[3] 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.

[4] Z. Ramzi, K. Michalewicz, J.-L. Starck, T. Moreau, and **P. Ciuciu**, "Wavelets in the Deep Learning Era," *submitted* to *Journal of Mathematical Imaging and Vision*, CEA Saclay CosmoStat, NeuroSpin & Inria Parietal, Saclay, France, July 2021.

[5] 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.

[6] 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.

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[8] 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*.

[9] 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.

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[11] 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.

[12] 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.

[13] D. La Rocca, **P. Ciuciu**, D. Engemann, and V. van Wassenhove, "Emergence of β and γ networks following multisensory training," *Neuroimage*, vol. 206, pp. Article 116313, Feb, 1 2020.

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[21] N. Chauffert, **Ciuciu, P.**, J. Kahn, and P. Weiss, "A projection method on measures sets," *Constructive Approximation*, vol. 45, no. 1, pp. 83–111, 2017.

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2 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.

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3 Manuscripts under review (2022)

[1] R. Baptista, M. Naudin, Chaithya G R, G. Daval-Frérot, F. Mauconduit, M. Lapert, **P. Ciuciu**, C. Lerman-Rabrait, A. Guillevin, R. Vignaud, and F. Boumezbeur, "Accelerated Sodium MRI using undersampled 3D SPARKLING at 7T," *submitted to* at *Magnetic Resonance in Medicine*, CEA Saclay/NeurSpin, & Inria MIND, Saclay, France, Oct. 2022.

[2] G. Daval-Frérot, 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 susceptility weighted imaging," *submitted to* at *Magnetic Resonance in Medicine*, CEA Saclay & Inria MIND, Saclay, France, Sep. 2022.

[3] Chaithya G R, G. Daval-Frérot, A. Massire, A. Vignaud, and **P. Ciuciu**, "Improving SPARKLING trajectories through Minimized Off-Resonance Effects and Gridding of Low Frequencies," *submitted to* at *Magnetic Resonance in Medicine*, CEA Saclay & Inria MIND, Saclay, France, Sep. 2022.

[4] G. Biagi, **P. Ciuciu**, and Z. Saghi, "Learning based image reconstruction for electron tomography under limited data acquisition conditions," *submitted to* at *Magnetic Resonance in Medicine*, CEA Grenoble and CEA Saclay, & Inria MIND, Grenoble, France, Sep. 2022.

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.

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[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.

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[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.

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

[1] 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.

[2] 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.

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[8] 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.

[9] 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.

[10] 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.

[11] 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.

[12] 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.

[13] V. van Wassenhove, D. La Rocca, D. Engelmann, and **P. Ciuciu**, "Temporal attention vs. comodulation in multisensory causal inference," in *Proceedings of the 23rd International Congress on Acoustics*, Aachen, Germany, Sep. 2019, pp. 1–8.

[14] Z. Ramzi, **P. Ciuciu**, and J.-L. Starck, "Benchmarking proximal methods acceleration enhancements for CS-acquired MR image analysis reconstruction," in *(SPARS)*, Toulouse, France, July 2019.

[15] H. Cherkaoui, T. Perret, A. Halimi, and **P. Ciuciu**, "Sparsity-based blind deconvolution of neural activation signal in fMRI," in *44th Proceedings of the International Conference on Acoustic, Speech and Signal Processing*, Brighton, UK, May 2019, pp. 1323–1327.

[16] C. Lazarus, P. Weiss, N. Chauffert, F. Mauconduit, L. El Gueddari, A. Vignaud, C. Destrieux, I. Zemmoura, and **P. Ciuciu**, "SPARKLING: variable-density k-space filling curves for accelerated MRI," in *27th Proceedings International Society for Magfnetic Resonance in Medicine*, Montreal, QC, Canada, May 2019, Abstract 110: Finalist of the Young Investigator Award.

[17] O. Darwiche-Domingues, **P. Ciuciu**, D. La Rocca, P. Abry, and H. Wendt, "Multifractal analysis for cumulant-based epilepic seizure detection in EEG time series," in *16th International Symposium on Biomedical Imaging*, Venice, Italy, Apr. 2019, pp. 143–146.

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[39] 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).

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[59] **Ciuciu, P.**, J. Idier, and S. Sockeel, "Modeling non-linear and non-stationary effects of the BOLD response using mixture models in fMRI," in *12th Proc. HBM*, Florence, Italy, June 11-15 2006.

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[66] **Ciuciu, P.**, 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. HBM*, New York, USA, June 2003.

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9 Invited talks and seminars (since 2002)

[1] **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.

[2] **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.

[3] **P. Ciuciu**, "Functional Connectivity in the Infra-slow Human Brain Activity in MEG," Helsinki, Finland, Nov. 2021, Neuroscience Center (HiLIFE, University of Helsinki).

[4] **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.

[5] **P. Ciuciu**, "Accelerated MR imaging: from shorter data acquisition to faster image reconstruction," Marseille (virtual), France, Jan. 2021, Aix-Marseille Université.

[6] **P. Ciuciu**, "Accelerated MR imaging: from shorter data acquisition to faster image reconstruction," Gif-sur-Yvette (virtual), France, Dec. 2020, CEA/NeuroSpin seminars.

[7] **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.

[8] **P. Ciuciu**, "Emergence of β and γ networks following multisensory training," Helsinki, Finland, Feb. 2020, Neuroscience Center, University of Helsinki.

[9] **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.

[10] **P. Ciuciu**, "Online MR image reconstruction for compressed sensing acquisition in T_2^* imaging," Sophia-Antipolis, France, Oct. 2019, I3S – CNRS.

[11] **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 ».

[12] **P. Ciuciu**, "Apprentissage profond pour la reconstruction d'images IRM acquises sous forme comprimée," Paris, France, Apr. 2019, Collège de France.

[13] **P. Ciuciu**, "SPARKLING: variable-density k-space filling curves for accelerated T2*-weighted MRI," Geneva, Switzerland, Feb. 2019, Geneva University Hospital.

[14] **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.

[15] **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.

[16] **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.

[17] **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.

[18] **P. Ciuciu**, "Prospective SPARKLING trajectories for accelerated 2D high resolution MRI at 7 Tesla," Montreal, QU, Canada, Dec. 2017, École Polytechnique de Montreal.

[19] **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.

[20] **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.

[21] **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.

[22] **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.

[23] **P. Ciuciu**, "Convergence of neural activity to multifractal attractors in MEG predicts learning," Avignon, France, Sep. 2016, GDR of Multifractal Analysis.

[24] **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.

[25] **P. Ciuciu**, "Compressive sensing for MRI," Rennes, France, 21 June 2016, INRIA Bretagne Atlantique.

[26] **P. Ciuciu**, "New physically plausible compressive sampling schemes for MRI: First results at 7 tesla," Valbonne, France, 17 June 2016, INRIA Sophia-Antipolis.

[27] **P. Ciuciu**, "Convergence to asymptotic multifractal dynamics in MEG predicts learning," Geneva, Switzerland, 3 May 2016, University of Geneva - Campus BioTech.

[28] **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.

[29] **P. Ciuciu**, "Compressed sensing for high resolution MRI at 7 Tesla," Grenoble, France, 8 Feb. 2016, GIN INSERM.

[30] **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.

[31] **P. Ciuciu**, "On the generation of compressed sampling schemes in MRI," Gif-sur-Yvette, France, 28 Jan. 2016, Cosmostat lab, IRFU/CEA.

[32] **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.

[33] **P. Ciuciu**, "Convergence to asymptotic multifractal dynamics predicts learning," Paris, France, 13 Mar. 2015, European Institute of Theoretical Neuroscience.

[34] **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, CHESS ERC project.

[35] **P. Ciuciu**, "Joint detection-estimation of brain activity in fMRI," Toulouse, France, 14 Nov. 2014, Atelier restauration d'images CNES.

[36] **P. Ciuciu** and S. Badillo, "Multi-subject Bayesian joint detection and estimation in fMRI," University of Warwick, Conventry, UK, 5 Sep. 2014, NeuroStats workshop.

[37] **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.

[38] **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.

[39] **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.

[40] **P. Ciuciu**, N. Chauffert, and P. Weiss, "Physically plausible compressed sensing schemes for MRI," Lausanne, Suisse, 2 July 2013, École Polytechnique Fédérale de Lausanne.

[41] **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.

[42] **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.

[43] **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.

[44] **P. Ciuciu**, "Modulation of scale-free properties of brain activity in MEG," Paris, France, 28 Aug. 2012, 18ième congrès international Biomag.

[45] **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.

[46] **P. Ciuciu**, "Scale-free and multifractal time dynamics in the brain," Créteil, France, 1er June 2012, SCAM, universités Paris XII & Paris-Est.

[47] **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.

[48] **P. Ciuciu**, "Multifractal properties of the fMRI signal during rest and task," Bethesda,, 20 Sep. 2011, NIH/NINDS/LFMI meeting.

[49] **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".

[50] **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".

[51] **P. Ciuciu**, "Multifractal analysis of resting state networks in functional MRI," Grenoble, France, Apr. 2011, GIPSA lab (CNRS).

[52] **P. Ciuciu**, "Impact of the joint detection-estimation approach on group level analyses in fMRI," Strasbourg, France, Nov. 2010, Université Louis Pasteur.

[53] **P. Ciuciu**, "Impact of the parallel mri reconstruction algorithm on brain activity detection in fMRI," Roma, France, Nov. 2010, IEEE ISABEL workshop.

[54] **P. Ciuciu**, "Post-modern fMRI data analysis in parallel imaging," Gif-sur-Yvette, France, 13 Sep. 2010, Séminaire NeuroSpin/CEA.

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