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Academic degrees:

- “Agregação em Engenharia Biomédica e Biofísica”, Faculty of Science, University of Lisbon, Portugal, 2014
- M.Sc., Computer Science, University College London, UK, 1992
- Ph.D., Physics, University of Sussex, UK, 1987
- B.Sc., Physics, University of Sussex, UK, 1981
- International Baccalaureate, Lycée International de Saint-Germain-en-Laye, France, 1977

Present positions:

- Associate Professor, Faculty of Science, University of Lisbon, since June 2014.
- Vice-President of the Physics Department, Faculty of Science, University of Lisbon, since Sept 2015
- Member of the Advisory Board of [Neuroelectronics Barcelona](#), since May 2015

Previous positions:

- Coordinator of the PhD program in Biomedical Engineering and Biophysics, Faculty of Science, University of Lisbon, 2014-2017.
- Assistant Professor, Faculty of Science, University of Lisbon, 1993-2014.
- Senior scientist, Neuroelectronics Barcelona SL, Barcelona, Spain, 2011-2012.

- Coordinator of the Biomedical Engineering course (5 years, BSc+MSc), Faculty of Science, University of Lisbon, 2007-2011.
- Director, Institute of Biophysics and Biomedical Engineering, Faculty of Science, University of Lisbon, 2005-2011.
- Subdirector, Institute of Biophysics and Biomedical Engineering, Faculty of Science, University of Lisbon, 1999-2005.
- Research Fellow, Biomedical Magnetic Resonance Research Group, St. George's Hospital Medical School, London, UK, 1987-1991.
- Research Fellow, Rutherford and Appleton Laboratory, Oxford, UK, 1985-1986.

Main scientific area of research: Stimulation of excitable tissues

Other scientific areas of interest: MRI, Medical Imaging

Recent publications:

1. Fernandes SR, Salvador R, Wenger C, de Carvalho M, **Miranda PC**, "Transcutaneous spinal direct current stimulation of the lumbar and sacral spinal cord: a modelling study", 2018, *J Neural Eng* 15(3): 036008. [DOI](#)
2. Wenger C, **Miranda PC**, Salvador R, Thielscher A, Bomzon Z, Giladi M, Mrugala M, Korshoej AR, "A review on Tumor Treating Fields (TTFields): Clinical implications inferred from computational modelling", accepted in *IEEE Reviews in Biomedical Engineering*, Sept 2017. [DOI](#)
3. **Miranda PC**, Salvador R, Wenger C, Fernandes SR, "Virtual humans help to design efficient non-invasive brain and spinal cord electrical stimulation", 2017, *IEEE Pulse Magazine*, 8(4):42-45. [PubMed](#)
4. Antal A, Alekseichuk I, Bikson M, Brockmüller J, Brunoni AR, Chen R, Cohen LG, Dowthwaite G, Ellrich J, Flöel A, Fregni F, George MS, Hamilton R, Haueisen J, Herrmann CS, Hummel FC, Lefaucheur JP, Liebetanz D, Loo CK, McCaig CD, Miniussi C, **Miranda PC**, Moliadze V, Nitsche MA, Nowak R, Padberg F, Pascual-Leone A, Poppendieck W, Priori A, Rossi S, Rossini PM, Rothwell J, Rueger MA, Ruffini G, Schellhorn K, Siebner HR, Ugawa Y, Wexler A, Ziemann U, Hallett M, Paulus W, "Low intensity transcranial electric stimulation: Safety, ethical, legal regulatory and application guidelines", 2017, *Clin Neurophysiol*, 128(9):1774-809. [DOI](#)

5. Ilmoniemi RJ, Maki H, Saari J, Salvador R, **Miranda PC**, "The frequency-dependent neuronal length constant in Transcranial Magnetic Stimulation," 2016, *Front Cell Neurosci*, 10;194:1-6. [DOI](#)
6. Wenger C, Salvador R, Basser PJ, **Miranda PC**, "Improving Tumor Treating Fields treatment efficacy in patients with Glioblastoma using personalized array layouts", *Int J Radiat Oncol*, 2016, 94:1137-1143. [DOI](#)
7. Lantos J, Young RJ, **Miranda PC**, Wenger C, Wong ET, "TTFields Therapy: Preclinical and clinical data", Ch 25, in *Handbook of Neuro-Oncology and Neuroimaging*, 2nd ed, HB Newton, Editor. 2016, Academic Press. [Web page](#)
8. Wenger C and **Miranda PC**, "Biophysical Effects of Tumor Treating Fields", Ch 3, in *Alternating Electric Fields Therapy in Oncology: A Practical Guide to Clinical Applications of Tumor Treating Fields*, E. T. Wong, Editor. 2016, Springer International Publishing, 2016. [DOI](#).
9. Bortoletto M, Rodella C, Salvador R, **Miranda PC**, Miniussi C, "Reduced Current Spread by Concentric Electrodes in Transcranial Electrical Stimulation (tES)", *Brain Stimul*, 2016, *Brain Stimul*, 2016, 9;4:525-8. [DOI](#)
10. Otal B, Dutta A, Foerster A, Ripolles O, Kuceyeski A, **Miranda PC**, Edwards DJ, Ilic TV, Nitsche MA, Ruffini G, "Opportunities for guided multichannel non-invasive transcranial current stimulation in post-stroke rehabilitation", *Front Neurol*, 2016, 7;21:1-11. [DOI](#)
11. Woods AJ, Antal A, Bikson M, Boggio PS, Brunoni AR, Celnik P, Cohen LG, Fregni F, Herrmann CS, Kappenman ES, Knotkova H, Liebetanz D, Miniussi C, **Miranda PC**, Paulus W, Priori A, Reato D, Stagg C, Wenderoth N, Nitsche MA, "A technical guide to tDCS, and related non-invasive brain stimulation tools", *Clin Neurophysiol*, 2016, 127:1031-1048. [DOI](#)
12. Salvador R, Wenger C, **Miranda PC**, "Investigating the cortical regions involved in MEP modulation in tDCS", *Front Cell Neurosci*, 2015, 9:405:1-11. [DOI](#)
13. Wenger C, Salvador R, Basser PJ, **Miranda PC**, "The electric field distribution in the brain during TTFields therapy and its dependence on tissue dielectric properties and anatomy: a computational study", *Phys Med Biol*, 2015, 60:7339-7357. [DOI](#)
14. **Miranda PC**, Mekonnen A, Salvador R, Basser PJ, "Predicting the Electric Field Distribution in the Brain for the Treatment of Glioblastoma", *Phys Med Biol*, 2014, 59:4137-4147. [DOI](#)

15. Ruffini G, Fox MD, Ripolles O, **Miranda PC**, Pascual-Leone A, “Optimization of multifocal transcranial current stimulation for weighted cortical pattern targeting from realistic modeling of electric fields”, *NeuroImage*, 2014, 89:216-225. [DOI](#)
16. **Miranda PC**, Mekonnen A, Salvador R, Ruffini G, “The electric field in the cortex during transcranial current stimulation”, *NeuroImage*, 2013, 70: 48-58. [DOI](#)
17. Merlet I, Birot G, Salvador R, Molaee-Ardekani B, Mekonnen A, Soria-Frish A, Ruffini G, **Miranda PC**, Wendling F, “From oscillatory transcranial current stimulation to scalp EEG changes: A biophysical and physiological modeling Study”, *PLoS One*, 2013, 8(2): e57330. [DOI](#)
18. **Miranda PC**, “The physics of effects of transcranial brain stimulation”, Ch. 29, in *Brain Stimulation: Handbook of Clinical Neurology*, AM Lozano and M Hallett, Editors. 2013, Elsevier Science. [Web page](#)
19. Angelakis E., Liouta E., Andreadis N., Leonardos A., Ktonas P., Stavrinou L., **Miranda P. C.**, Mekonnen A., Sakas D., “Transcranial alternating current stimulation reduces symptoms in intractable idiopathic cervical dystonia: A case study”, *Neurosci Lett*, 2013, 533: 39-43. [DOI](#)
20. Ruffini G., Wendling F., Merlet I., Molaee-Ardekani B., Mekonnen A. , Salvador R., Soria-Frisc A., Grau C., Dunne S., **Miranda P. C.**, “Transcranial current brain stimulation (tCS): Models and technologies”, *IEEE Trans Neural Syst Rehabil Eng*, 2013, 21(3): 333-45. [DOI](#)
21. Márquez-Ruiz J., Leal-Campanario R., Sánchez-Campusano R., Molaee-Ardekani B., Wendling F., **Miranda P. C.**, Ruffini G., Gruart A., Delgado-García J. M., “Transcranial direct-current stimulation modulates synaptic mechanisms involved in associative learning in behaving rabbits”, *Proc Natl Acad Sci U S A*, 2012, 109(17): 6710-5. [DOI](#)
22. Wagner TA, **Miranda PC**, “Biophysical foundations of TMS and tES: from electromagnetic fields to neural response”, Ch. 5, in *Transcranial Brain Stimulation*, C Miniussi, W Paulus and PM Rossini, Editors. 2012, Frontiers in Neuroscience series, CRC Press. [Web page](#)
23. Peterchev A. V., Wagner T. A., **Miranda P. C.**, Nitsche M. A., Paulus W., Lisanby S. H., Pascual-leone A., Bikson M., “Fundamentals of transcranial electric and magnetic stimulation dose: definition, selection, and reporting practices”, Review Article, *Brain Stimul*, 2012, 5(4): 435-453. [DOI](#)

24. Faria P., Hallett M., **Miranda P. C.**, "A finite element analysis of the effect of electrode area and inter-electrode distance on the spatial distribution of the current density in tDCS", *J Neural Eng*, 2011, 8(6): 066017 (11 pp). [DOI](#)
25. Salvador R, Silva S. Basser PJ, **Miranda PC**, "Determining which mechanisms lead to activation in the motor cortex: A modeling study of transcranial magnetic stimulation using realistic stimulus waveforms and sulcal geometry", *Clin Neurophysiol*, 2011, 122(4): 748-758. [DOI](#)
26. Rossi S, Hallett M, Rossini PM, Pascual-Leone A and **The Safety of TMS Consensus Group**, "Safety, ethical considerations, and application guidelines for the use of transcranial magnetic stimulation in clinical practice and research." *Clin Neurophysiol*, 2009, 120(12): 2008-39. [DOI](#)
27. Salvador R, **Miranda PC**, Roth Y, Zangen A, "High permeability cores to optimize the stimulation of deeply located brain regions using transcranial magnetic stimulation." *Phys Med Biol*, 2009, 54(10): 3113-28. [DOI](#)
28. **Miranda PC**, Faria P, Hallett M, "What does the ratio of injected current to electrode area tell us about current density in the brain during tDCS?" *Clin Neurophysiol*, 2009, 120(6): 1183-7. [DOI](#)
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32. **Miranda PC**, "Basic electromagnetism", in "Magnetic stimulation in clinical neurophysiology", M. Hallett and S. Chokroverty, Editors. 2005, Butterworth-Heinemann: Philadelphia, PA. pp. 1-15. [Web page](#)
33. **Miranda PC**, Hallett M, Basser PJ, "The electric field induced in the brain by magnetic stimulation: a 3D Finite Element analysis of the effect of tissue heterogeneity and anisotropy", *IEEE Trans Biomed Eng*, 2003, 50(9): 1074-85. [DOI](#)

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35. Carvalho M, **Miranda PC**, Sales Luís ML, Ducla Soares E, “Neurophysiological features of fasciculations potentials evoked by transcranial magnetic stimulation in Amyotrophic Lateral Sclerosis”, J Neurol, 2000, 247(3): 189-94. [DOI](#)
36. Carvalho M, **Miranda PC**, Falcão F, Jardim L, “Reproducibility of cortico_ motor threshold: some observations”, Muscle & Nerve, 1999, 22(4): 538-9. [DOI](#)
37. Carvalho M, **Miranda PC**, Sales Luís ML, Ducla Soares E, “Cortical muscle representation in ALS patients: Changes over the disease evolution”, Muscle & Nerve, 1999, 22(12): 1684-92. [DOI](#)
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Bibliometric data:

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Patents:

1. "Coil for magnetic stimulation and methods for using the same" - NIH
Patent numbers (publication date): [WO2002032504A2](#) (2002), [CA2425276A1](#) (2002), [WO2002032504A3](#) (2003), [EP1326681A2](#) (2003), [WO2002032504A8](#) (2004), [US20040078056](#) (2004), [DE60125963T2](#) (2007), [DE60125963D1](#) (2007), [EP1326681B1](#) (2007), [US20080312706](#) (2008), [US7407478](#) (2008), [US8608634](#) (2013), [CA2425276C](#) (2013)
2. "Transcranial magnetic stimulation system and methods" - Brainsway
Patent numbers (publication date): [WO2006134598A2](#) (2006), [US20060287566](#) (2006), [CA2955681A1](#) (2006), [CA2610991A1](#) (2006), [WO2006134598A3](#) (2007), [EP1890762A2](#) (2008), [US20110288365](#) (2011), [US20110288364](#) (2011), [US7976451](#) (2011), [EP1890762A4](#) (2011), [US8277371](#) (2012), [US20130178692](#) (2013), [US8388510](#) (2013), [US20140249352](#) (2014), [US8771163](#) (2014), [US9132278](#) (2015), [US20160059027](#) (2016), [CA2610991C](#) (2017)
3. “Method and a system for optimizing the configuration of multisite transcranial current stimulation and a computer-readable medium” – Neuroelectrics Barcelona S. L.

Patent numbers (publication date): [WO2015059545A1](#) (2015), [US20150112403](#) (2015),
[EP3060295A1](#) (2016), [CN105916547A](#) (2016), [US9694178](#) (2017)