Alberto Sorrentino

Fixed-term assistant professor

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Education and training

2007
PhD in Physics
Particle Filters for Magnetoencephalography
Department of Physics - Genova - IT

2003
Master in Physics
Neuromagnetic analysis of stochastic resonance - 110/100 cum laude
Department of Physics - Genova - IT

Academic experience

2013 - 2018
Assistant professor
Department of Mathematics - Genova - IT
teaching research

2010 - 2012
Marie Curie Research Fellow
Department of Statistics -- University of Warwick - Coventry - GB

2007 - 2010
Post-doc
UNIGE and CNR - Genova - IT

Language skills

English
Proficient

French
Basic

Teaching activity

Since the academic year 2018-19 I teach in the following courses
Calcolo Numerico (III Anno CdL Matematica Triennale)
Problemi Inversi e Applicazioni (IV/V Anno CdL Matematica Magistrale)
Statistica descrittiva (esercitazioni -- I anno CdL Matematica e SMID)
Analisi I (esercitazioni -- I Anno CdL Fisica)

Research interests

My research mainly focuses on the development of computational methods for applications.

Localization of neural activity from magneto/electro-enephalography data (M/EEG). M/EEG record magnetic/electric fields generated by neural currents inside the brain, with millisecond temporal resolution. Localizing brain activity from these recordings can be important in a number of applications, including basic neuroscience, connectivity estimation and epilepsy evaluation. I mainly work at the development of Monte Carlo methods for source localization, and at the evaluation of the robustness of connectivity metrics. Active collaborations: Aalto Brain Center, Helsinki, Finland; BESA GmbH, Munich, Germany; Ospedale Niguarda, Milano; Ospedale Gaslini, Genova; Istituto Carlo Besta, Milano.

Reconstruction of solar flares from RHESSI data. RHESSI is a NASA satellite that records X-rays from the sun. The most interesting events are solar flares, big explosions that project matter and energy through space, sometimes reaching Earth. i mainly work at the development of methods for sparse Bayesian imaging. Active collaborations: Goddard NASA Space Flight Center.

Reconstruction of optical and physical parameters of the atmosphere from LIDAR data. LIDAR records the backscattered light, emitted by a laser pointing towards the atmosphere. Measurements of light backscatter through elastic and anelastic (Raman) processes allow to estimate the extinction and backscattering coefficients of the atmosphere at different altitudes and then the number size distribution of particles. I mainly work at the development of iterative and Monte Carlo methods. Active collaborations: ALA (Advanced Lidar Applications) srl, Roma; Dipartimento di Fisica, Universita' di Napoli.