Seminario di Matematica

Nell'ambito delle attività seminariale del Dipartimento di Matematica, su proposta del gruppo di ricerca “Equazioni di Evoluzione: analisi qualitativa e metodi numerici”

responsabile locale il Prof. Felice Iavernaro,

Il Prof. Luca Gerardo Giorda
(Basque Center for Applied Mathematics, Bilbao, Spain)
terrà presso il Dipartimento di Matematica dell'Università degli Studi di Bari Aldo Moro, la seguente conferenza:

“Patient-specific numerical simulation of Cortical Spreading Depression”

13.06.2016       ore 11.30       aula XIII

ABSTRACT
Migraine is a prevailing disease in present day population. Cortical spreading depression (CSD) - a depolarisation wave that originates in the visual region and propagates across the cortex to the peripheral areas - has been suggested, by several studies, as a correlate of visual aura, a neurological phenomenon preceding migraine and causing perceptual disturbance. As of today, little is known about the mechanisms that can trigger or stop such phenomenon. However, the complex and highly individual characteristics of the brain cortex suggest that the geometry might have a significant impact in supporting or contrasting the propagation of CSD. Accurate patient-specific computational models are thus fundamental to cope with the high variability in cortical geometries among individuals, but also with the conduction anisotropy induced in a given cortex by the complex neuronal organisation in the grey matter. We present a distributed mean field model for neural excitation coupled with patient-specific conductivity tensors derived locally from Diffusion Tensor Imaging (DTI) data. We also discuss our simulation results highlighting significant differences in the propagation traveling patterns of CSD, both intra and inter-hemispherically. This is a joint work with JM Kroos and I. Marinelli from BCAM (Bilbao), JM Cortes and I. Diez from BioCruces Health Research Institute (Bilbao) and S. Stramaglia from University of Bari.

La S.V. è cordialmente invitata a partecipare.
Bari, 01.06.2016

F.to Il Direttore del Dipartimento di Matematica
Prof.ssa Addolorata Salvatore