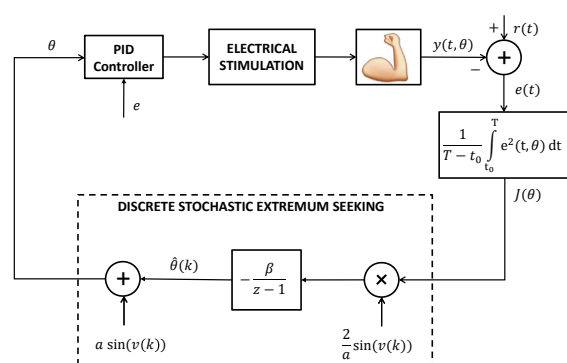


Quinta-feira, 23 de maio de 2019

Programa

14:00 - 15:20 – **Tiago Roux de Oliveira (UERJ)**

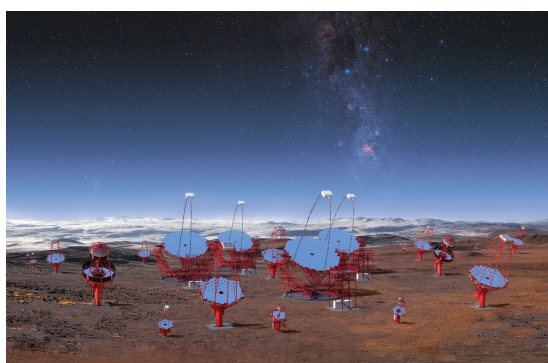
Model-Free Neuromuscular Electrical Stimulation by Stochastic Extremum Seeking



Stochastic Extremum Seeking (ES) approach is employed to adapt the gains of a Proportional-Integral-Derivative (PID) control law for functional neuromuscular electrical stimulation (NMES). The proposed scheme is applied to control the position of the arm of healthy volunteers and stroke patients so that coordinated movements of flexion/extension for their elbow can be performed. This approach eliminates the initial tuning tests with patients since the controller parameters are automatically computed in real time. The PID parameters are updated by means of a discrete version of multivariable stochastic ES in order to minimize a cost function which brings the desired performance requirements. Experimental results with stroke patients show the usual specifications commonly considered in physiotherapy for functional rehabilitation are eventually satisfied in terms of steady-state error, settling time, and percentage overshoot. Quantitative results show a reduction of 65% in terms of the root-mean-square error (RMSE) when comparing the tracking curves of the last cycle to the first cycle in the experiments with all subjects.

15:40 - 17:00 – **Ulisses Barres de Almeida (CBPF)**

Open UNiverse
Space science data for everyone



Cherenkov Telescope Array Construction, science case and the case for open science

CTA will be the major global observatory for VHE gamma-ray astronomy over the next decade and beyond. The scientific potential of CTA is extremely broad: from understanding the role of relativistic cosmic particles, to the search for dark matter. CTA is an explorer of the extreme universe, probing environments from the immediate neighbourhood of black holes, to cosmic voids on the largest scales. Covering photon energies from 20 GeV to 300 TeV, CTA will improve on all aspects of the performance with respect to current instruments, surveying the high-energy sky hundreds of times faster than previous TeV telescopes. This talk will present the science of CTA and discuss its design infrastructure from the point of view of the potential improved performance of the array by means of multi-objective optimisation of the telescopes positions on the ground, employing evolutionary algorithms. Finally, the talk will conclude by describing how the concept of an open space science initiative can stimulate and increase the availability and usability of astronomical data, extending the potential of scientific discovery of observatories like CTA in the context of the new multi-wavelength and multi-messenger astrophysics.

17:00 – Discussão e lanche

Local

Instituto de Matemática e Estatística - UERJ
Auditório RAV 62, 6º andar, Bloco F
UERJ Campus Maracanã
Rua São Francisco Xavier, 524
Maracanã, Rio de Janeiro - RJ

Contatos

Americo Cunha (UERJ)	americo@ime.uerj.br
Augusto Q. Teixeira (IMPA)	augusto@impa.br
Evaldo M. F. Curado (CBPF)	evaldo@cbpf.br
Leandro P. R. Pimentel (UFRJ)	lprpimentel@gmail.com
Maria Eulália Vares (UFRJ)	eulalia@im.ufrj.br
Nuno Crokidakis (UFF)	nuno@mail.if.uff.br
Simon Griffiths (PUC-Rio)	simon@mat.puc-rio.br

Realização:



Apoio:



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