Postdoctoral position on "Mapping the higher-order dynamics of neurodegeneration in human brain networks"

The Swiss National Science Foundation (SNSF) is funding a new postdoctoral position at EPFL to work with Dr. Enrico Amico (https://miplab.epfl.ch/index.php/people/eamico) on *higher-order models for brain network dynamics and neurodegeneration*. This project is part of the larger COST action on "Mathematical models for interacting dynamics on networks", and will be carried out in a close European collaboration with the two external partners of the proposal, Dr. Giovanni Petri (ISI Foundation, Torino) and Dr. Federico Battiston (Central European University, Vienna).

The overarching goal of this project is to explore *macro-scale*, *time-dependent* and *disease-specific* higher-order processes in human brain networks with the purpose of getting a deeper understanding of scenarios where brain dynamics is impaired or affected, as in the case of complex neurodegenerative diseases, such as Alzheimer's.

The postdoc will lead this proposal, with the aim to:

- Define and develop methodologies for "higher-order modeling" of functional brain data, taking advantage of the state of the art graph theoretical methodologies in algebraic topology, dynamic functional connectivity and hypergraphs;
- Investigate the interacting dynamics of these higher-order patterns across time;
- Apply these models to investigate brain dynamics in neurodegeneration, specifically in patients with Alzheimer's disease risk.

Candidates should hold a PhD with a focus on network neuroscience, network science, computational neuroscience and related fields. Strong programming skills (MATLAB or Python) are required. A Master's degree (or equivalent) in engineering, computer science, or physics is an advantage but not required.

The successful applicant will join Dr. Amico at EPFL and will be hosted within the MIP:Laboratory (https://miplab.epfl.ch/index.php/people/eamico). The laboratory is based in Campus Biotech, Geneva.

The preferred starting date would ideally be **February 1, 2020**, or as soon as possible after this date. The duration of the post is 2 years, with an option for a third year depending on results and productivity. Remuneration is based on the EPFL postdoctoral salary scale.

Interested candidates should email their application to Dr. Enrico Amico enrico.amico@epfl.ch with the object *COST Postdoc Application.* To apply, please submit a single PDF file containing a full CV (including publication list), personal statement (describing your personal qualifications, research interests and motivation for applying) and contact information of two referees. While not required, it is desirable for candidates to provide two of their key publications, as well as evidence for advanced software development experience (e.g. Github repo, etc). Shortlisted candidates will be contacted and scheduled for an interview. Letters of recommendation will be requested from shortlisted candidates only. The call will close on **December 15th**.

About EPFL

The Ecole polytechnique fédérale de Lausanne (EPFL) is one of the most dynamic university campuses in Europe and ranks among the top 20 universities worldwide. The EPFL employs 6,000 people supporting the three main missions of the institutions: education, research and innovation. The EPFL campus offers an exceptional working environment at the heart of a community of 16,000 people, including over 10,000 students and 3,500 researchers from 120 different countries.