Subject: Postdoc Positions, Applied Industrial Mathematics, Brazil

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The Center for Mathematical Sciences Applied to Industry (CEPID-CeMEAI) a post-doc position available for starting immediately. The requirements for each of the positions are described below. The salary is R$ 6.819,30 (USD 2000,00) per month tax free. The appointed Post-doc will also get return travel from his/her country to Brazil paid by the grant. The positions are initially for one year, renewable for a second year pending on suitable performance.

The main goal of this project is to understand how changes in the coupling structure of a network can affect the overall function. Using

synchronization as a paradigm of network function, we aim at
understanding how spontaneous collective behavior can be destroyed or
enhanced by such structural modifications. Recent results suggest that
certain modifications can lead to synchronization loss despite the
fact that they enhance topological properties of the network. This
project develops a mathematical theory for this phenomenon, and it is
divided into two objectives of increasing difficulty i) Classification
of structures and links leading to synchronization loss, and ii)
Effects of time-delays in the coupling structure. We will apply our
theoretical results to experiments involving networks of electrical
circuits and time-delayed lasers.

The successful applicant will participate of a collaborative effort
being developed by the Brazilian team headed by Dr.

Tiago Pereira and
a British team headed by Prof. Jeroen Lamb. A doctoral
degree in
Applied Mathematics, Engineering or a related area is
required,
together with strong background on Dynamical Systems
in particular
stability theory and synchronization. Candidates with
proven skills in
performing independent scientific research and in
programming for
high-performance computing environments will be
preferred.