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## Report about the Ph.D. Internship of Humberto Sandmann

Dear Madame, Dear Sir,

the Ph.D. student Humberto Sandmann visited our Network Dynamics Group at the Max Planck Institute for Dynamics and Self-Organization via your internship program from January to August 2010.

During this time, he was fully integrated in our research team, collaborating within our Institute, in particular with Dr. Fabio Schittler Neves, Dr. Erik Martens and myself. He was acquiring knowledge and skills about natural ways of computation, nonlinear dynamics and principles of self-organization. As a research project that will be part of his PhD thesis in Brasil, he developed further the so-called tempotron, a neural network model capable of detecting the occurrence or non-occurrence of neural communication pulses (spikes), to enable natural ways of computation by heteroclinic switching via adapting to complex spatio-temporal patterns. He successfully implemented this method in advanced computer simulations.

The student further actively participated in symposia and seminars run by our Institute and contributed and simultaneously learned new ideas in many discussions. He was also involved in our social team activities. During his stay, he gave two talks about his findings to the group. Part of his work is scheduled as a contribution to a future joint publication.

In resume, I believe that Humberto Sandman well benefitted from the collaborative research; he also established valuable new contacts though this internship.

Yours sincerely,

Marc Timme