



Postdoctoral position in spintronics for neuromorphic computing

The rising energy demand of artificial intelligence and large-scale data processing has led to a search for alternative low-power computing solutions beyond von Neumann architecture. Non-conventional computing approaches such as brain-inspired neuromorphic computing, wave-based computing, and reservoir computing, offer promising routes toward faster and more energy-efficient information processing. Spintronic devices are particularly attractive for non-conventional computing owing to their intrinsic non-volatility, high endurance, fast dynamics and potential for ultra-low-power operation. Recent advances have highlighted the potential of magnetic excitations, including chiral solitons and propagating spin waves, as physical building blocks for unconventional computing architectures. These magnetic excitations can be used to emulate neural networks and perform complex machine learning tasks with ultra low energy using reservoir computing and physical neural networks paradigm.

Spintec proposes an experimental postdoctoral position in neuromorphic spintronics focusing on the manipulation of magnetic solitons, such as skyrmions, and spin waves for unconventional computing. The objective is to develop and investigate nanomagnetic neural-network hardware capable of performing fast, energy-efficient machine learning tasks. The successful candidate will work at the intersection of materials science, magnetization dynamics, and computing. The activities will include the development of novel material systems to stabilize and excite the desired spin excitation, to investigate their dynamics using high frequency electrical and magnetic microscopy techniques, to develop physical models and training algorithms, to implement and experimentally validate hardware based machine learning tasks, such as pattern recognition and predictions tasks.

Applicants should send a CV and a cover letter to Olivier Boulle, olivier.boulle@cea.fr. Spintec is located in Grenoble, France.

SPINTEC
Commissariat à l'Énergie Atomique - INAC
Centre de Grenoble - 17, rue des Martyrs - 38054 Grenoble Cedex 9 France
Tél. : +33 (0)4 38 78 23 83 - +33 (0)4 38 78 21 27 - inac.cea.fr/spintec

Etablissement public à caractère industriel et commercial
R.C.S. PARIS B 775 685 019