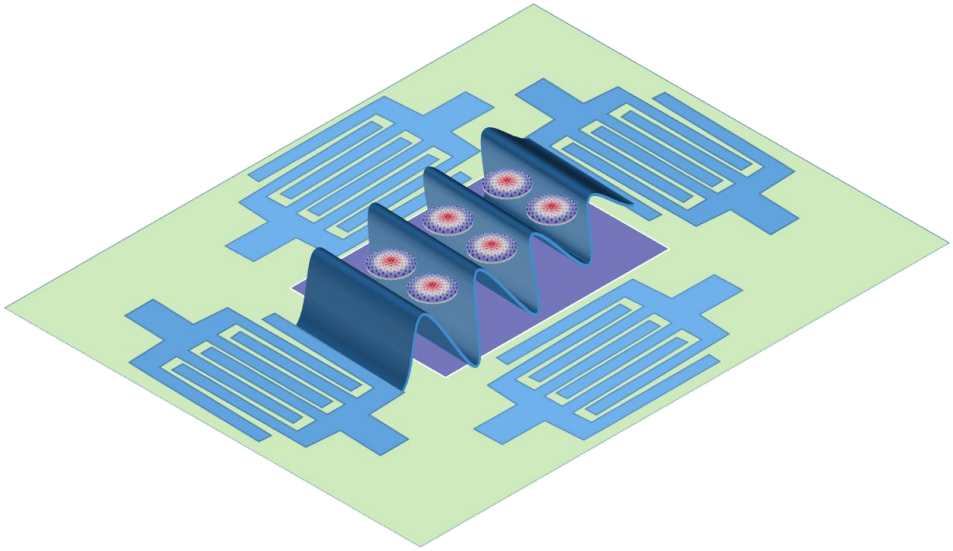
Recruiting a post-doctoral researcher on the control of magnetic skyrmions by surface acoustic waves



Context: The present offer is part of a French ANR project ACOUSKYR, within the PEPR-Spin. The aim of the ACOUSKYR project is to use surface acoustic waves (SAW) to nucleate, annihilate, move and detect skyrmions and skyrmion lattices. Mastering skyrmion manipulation is essential for the future development of agile and frugal devices. The influence of SAWs on these micronic or sub-micronic chiral spin textures is an emerging field of research that opens up new possibilities thanks to their wave properties, very weak attenuation, and the excellent control of their polarization, frequency and wave-vector. The skyrmion stacks are deposited by sputtering and their properties are already well mastered for Si substrates. The project is a collaboration with the teams of L. Thevenard at INSP (Paris), M. Belmeguenai at LSPM (Villetaneuse), N. Reyren at LAF (Palaiseau), Thibaut Devolder at C2N (Saclay), and D. Lacour at IJL (Nancy).

Position: The post-doc will (i) optimize the growth conditions of skyrmion stack on piezoelectric substrates, (ii) characterize the effect of a static strain on skyrmion behavior, (iii) pattern the devices with interdigitated transducers to further characterize the effect of SAW on skyrmions. Samples will be deposited and processed in the clean room available at Spintec. Magnetic, magneto-optical Kerr effect microscopy characterization under static strain will be performed at Spintec and the experiments with the SAW will be performed in collaboration with INSP with measurements on INSP setups.

The candidate must hold a Ph.D. in physics, with a good knowledge in magnetism and spintronics and familiarities with skyrmions and/or surface acoustic waves. A previous experience in clean room will be highly appreciated. The successful candidate will join the « Magnetic sensor» team of Spintec and a consortium of laboratories that are leaders in the control of skyrmions with gate voltage [1] and on the control of magnetization by SAWs [2].

[1] M. Schott et al., Nano Lett. (2017) ; T. Srivastava et al., Nano Lett. (2018) ; C.E. Fillion et al., Nat. Commun. 13 (2022)

[2] P. Kuszewski et al., J. Phys. Condens. Matter,30, 244003 (2018) ; L. Thevenard et al., Phys. Rev. B, 93, 140405 (2016) ; M. Kraimia et al., Phys. Rev. B, 101, 144425, (2020)

Contact: Hélène BEA (helene.bea@cea.fr)