

Open PhD Position:



Investigation of hybrid spin-wave computing elements by Brillouin Light Scattering

In terms of the project "[Spin Wave Computing for Ultimately-Scaled Hybrid Low-Power Electronics](#)" (CHIRON) funded by the [European H2020 Future and emerging technologies program](#), novel spin wave computing devices based on hybrid spin wave–CMOS circuits will be investigated by [AG Magnetismus](#) at TU Kaiserslautern (TUK). CHIRON constitutes an interdisciplinary approach joining partners from different European countries with expertise in materials science, physics, manufacturing, electrical engineering, device simulation, and circuit design. With the ultimate sensitivity of Brillouin light scattering microscopy, we will study and assess the performance of micro- and nano-sized basic logic gates and novel transducers for the conversion between the CMOS and spin-wave domain.

The PhD position is on a three-year basis (75% of a full-time researcher position E13).

Outline of the PhD projects at TUK:

- Design, simulation and characterisation of spin-wave logic gates
- Development and investigation of novel magneto-electric transducers between CMOS and spin wave domains in hybrid NEMS systems

All studies will be performed in close collaboration with our European project partners for sample production (e.g. [imec](#) in Belgium, [IMT](#) in Romania and [FORTH](#) in Greece) and microwave characterisation (CNRS and Thales, France).

To fulfil these tasks, the PhD student will be trained in the following techniques:

- Brillouin light scattering spectroscopy
- Inductive microwave measurement techniques and Ferromagnetic Resonance spectroscopy
- Micromagnetic Simulations

The candidate should possess:

- Basic knowledge about Magnetism – knowledge about Spin waves, Magnetisation dynamics and/or (wave) logic is a plus
- Basic experimental skills – experience in Labview or Python programming, RF techniques and/or Magneto-optical techniques is a plus
- Self-motivation, ability to work with an open mind in a highly collaborative environment, very good English proficiency, German proficiency is a plus but not strictly required

AG Magnetismus currently consists of about 35 researchers, among which are 15 PhD students. We offer a welcoming, international working atmosphere, with good possibilities to travel in the framework of international collaborations and to visit international conferences. The candidate will be embedded in a European collaborative network.

If you are interested, please send your application including CV and motivation letter to ppirro@rhrk.uni-kl.de.

