

# Post-doctoral fellowship in theory of high spatial resolution magnetic studies

at the Department of Physics and Astronomy, Uppsala University.

Starting date: not fixed, preferably before the October of 2020.

Research area: Elastic and inelastic scattering of electrons on magnetic materials.

The Division of Materials theory is known to have a world-class research environment in the ab-initio computational research on the materials properties. Among the wide range of research activities at the division, a substantial effort is invested into simulations and interpretation of spectroscopic data, including elastic and inelastic scattering of electrons in electron microscopy. Specifically, electron magnetic circular dichroism (EMCD) – a method under development – is expected to lead to a magnetic measurement method with high spatial resolution, down to atomic scale.

The post-doctoral researcher will join an international team focused on development of the theoretical methods for simulations of inelastic scattering and dynamical diffraction effects. He/she will perform simulations and interpretation of experiments performed at the laboratories of our coworkers. The work may also involve electronic structure calculations and/or molecular dynamics simulations using codes such as WIEN2k, FPLO, SIESTA, LAMMPS. Analytical development of theory and its implementation is also planned.

The applicant is expected to have a PhD degree in Physics, or equivalent, with a good background in quantum mechanics, scattering theory and solid-state physics. Previous experience in molecular dynamics simulations, ab-initio electronic structure calculations of magnetic properties and spectra (XAS or EELS/ELNES), and dynamical diffraction effects will be considered as an extra merit. The application should include a statement of research interest, CV, a copy of PhD thesis, list of publications and other relevant materials, if available. Also, letter(s) of recommendation should be included.

The post-doctoral position is open for one year with a possibility of prolongation to two years.

**For more information**, please contact: Jan Ruzs, tel: +46-(0)18-4715844, email: [jan.rusz@physics.uu.se](mailto:jan.rusz@physics.uu.se).

**The application should be sent to:** Jan Ruzs, Department of Physics and Astronomy, Ångströmlaboratory, Box 516, Uppsala, SE-751 20, Sweden

**Deadline: April 3rd, 2020.**