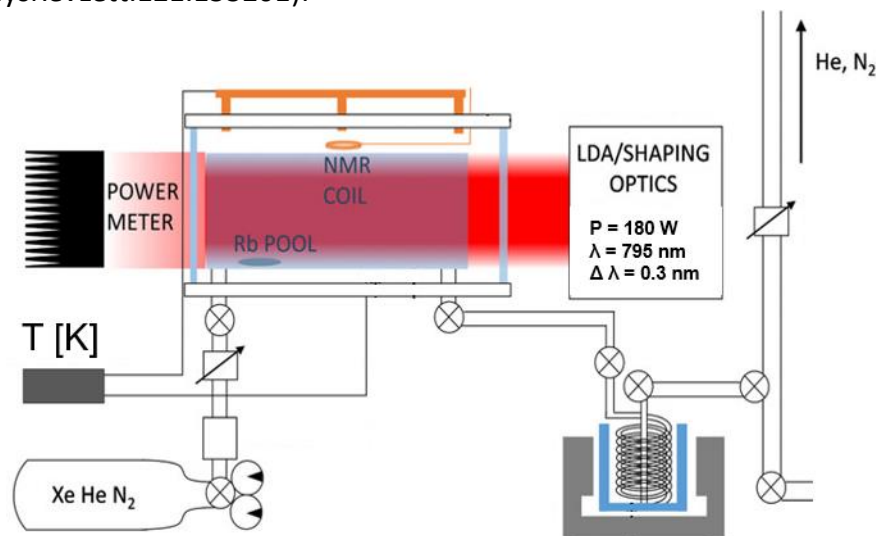


Master thesis and Hiwi-job in Engineering / Physics Nuclear Magnetic Resonance

We are offering a Master thesis/HiWi job on hyperpolarized magnetic resonance combined with the scientific assistant job.

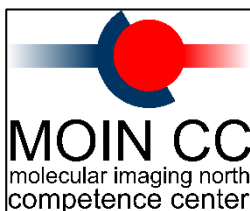
Hyperpolarization is a phenomenon of a dramatic increase of the MRI signal of selected nuclei by several orders of magnitude. For the hyperpolarization of gases, spin-exchange optical pumping (SEOP) is mainly used. In our experiments, we will exploit ^{129}Xe gas polarized under laser beam excitation. Then, polarized ^{129}Xe can be employed for human lung imaging, i.e. for ventilation, diffusion, and dissolved-phase measurements.

The main components of the SEOP polarizer are: laser diode array (LDA), an electromagnetic static field coil assembly, an oven containing a cylindrical optical cell, NMR and optical spectrometers, a laser power meter, a gas-handling manifold, and a cryostat (see more details in: Norquay et al., Phys. Rev. Lett., vol. 121, no. 15, p. 153201 (2018), 10.1103/PhysRevLett.121.153201):



The described setup will be installed at **Klinik für Nuklearmedizin** at UK SH, Haus L (Feldstr 21, 24105). On this occasion, your main goal, as a Hiwi, will be a support in installation and optimization of the polarizer. If time permits, you will assist in the assembling of the radiofrequency coil for the detection of Xenon signal and MR-imaging of the gas. The candidate should hold a Bachelor Degree in engineering/physics or related disciplines.

If you envision your career in research, and we caught your interest, get in touch via: mariia.anikeeva@rad.uni-kiel.de



Our group is an interdisciplinary team of scientists, mostly physicists, and engineers, who are working on the development of imaging methods for diagnostic and therapeutic applications in medicine. MOIN CC provides access to state-of-the-art equipment including 7 T MRI, a 400 MHz NMR spectrometer, parahydrogen, Xenon and a DNP polarizer.