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Keywords: neutron diffraction; single crystals; instrumentation

HEiDi, one of two new single crystal diffractometers at the research neutron source FRM-II, was developed in collaboration between the RWTH Aachen and the TU Munich. It was designed to cover a wide area of scientific applications using the specific advantages of the hot source of this facility. This year, after the launch of the FRM II, the instrument will start its work. Apart from the general advantage of a more accurate determination of atomic positions of light atoms like hydrogen (compared to X-ray diffraction) the large available Q space gives the opportunity to perform structural investigations which are not limited to the determination of atomic positions in single crystals only. For instance, temperature dependent determinations of anisotropic mean square displacements of a structure yield accurate statements about possible static and dynamic disorder effects and anharmonicities in the temperature areas of structural phase transitions. The reduction of absorption for shorter wavelengths allows investigations of compounds with highly absorbing isotopes like samarium or gadolinium. Furthermore, the different Q-dependence of the magnetic and the core interactions of the neutrons can be used to determine both the magnetic order and the order of the atomic cores in a crystal separately (derivation of magnetic data from Bragg data sets at low Q space and core data from Bragg data at high Q space) and therefore very accurately. Other possible investigations concern wavelength dependent extinction effects.

In order to fulfil the high expectations on the flexibility and the quality of the data measurements with this instrument, its components were selected with special care. Also new concepts were developed. Examples for this are very radiation-resistant collimators (developed at the HMI), a focusing monochromator unit with up to four different monochromator crystals to cover a broad range of wavelengths, an analyzer for purely elastic scattering, a multi-detector unit specially designed for fast neutrons to improve underground correction and a complex multi axes controller system for rapid data collection of Bragg reflections. Further details to these and other components of the instrument will be presented on the conference as well as our plans to extend its usability to further scientific applications in the future, e.g. investigations on magnetic structures using polarized neutrons.