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## HEiDi: Applications and Recent Developments of the Hot Single Crystal Diffractometer

*Tuesday, 5 December 2023 14:00 (3 hours)*

HEiDi is a versatile single crystal diffractometer using unpolarized thermal and hot neutrons to provide users worldwide with high quality structure data. The applications range from studies on various magnetic compounds [Maity2021, Dutta2023, Zobkalo2023] and new battery materials [Redhammer2021] to complex framework structures [Lotti2023].

Heidi's high neutron flux allows both studies up to a very high  $Q$  range and with strong absorbing sample environments like high pressure cells. The later was elaborated within two adjacent BMBF projects aiming to offer high pressure studies up to 10 GPa [Eich2021]. Currently, we are finalizing a small area detector (PSD) prototype to enhance HEiDi's general efficiency - faster and more comprehensive data collection - and to take a first step towards large  $Q$  studies for unpolarized neutron PDF analysis to serve the growing need on this kind of research.

[Maity2021] Maity et al. (2021); Phys. Rev. Materials 5, 014401; doi 10.1103/PhysRevMaterials.5.014401.

[Dutta2023] Dutta et al. (2023); Phys. Rev. B 107, 014420202; doi 10.1103/PhysRevB.107.014420.

[Zobkalo2023] Zobkalo et al.; Journal of Magnetism and Magnetic Materials 563, 170415; doi 10.1016/j.jmmm.2023.170415.

[Redhammer2021] Redhammer et al. (2021); ACS Appl. Mater. Interfaces, 350–359; doi 10.1021/acsami.0c16016

[Lotti2023] Lotti et al.; Am. Min., in press; doi: 10.2138/am-2023-8962

[Eich2021] Eich et al.; High Press. Res. 41[1], 88–96; doi: 10.1080/08957959.2020.1841759

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