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Bambus: a new inelastic neutron multiplexed analyzer for Panda at MLZ

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Cold triple-axis spectrometers (TAS) are dedicated to the investigation of low-energy excitations in a wide area of condensed matter physics, from quantum magnetism to unconventional superconductors. This technique allows us to measure individual points in the large (Q,E) space for one instrument setting, at low temperatures and high magnetic fields. New engineering solutions are being developed in order to increase the useful signal on TAS. With this purpose, the multianalyser Bambus is being constructed at the cold TAS Panda at MLZ, led by TU Dresden and in cooperation with JCNS. Its concept lies in collecting data at a certain energy transfers along a curved path in Q space, with the aim to construct broad reciprocal space maps at multiple energy transfers in a reliable, easy-to-use setup without movable axes. Hence, experiments will provide an overview in a large (Q,E) space, in order to get insights of broad features at low energy or study complex dispersion laws. Because this spectrometer is designed as a complementary module, a fast switch between the two setups is foreseen. This project received a new financial support from the BMBF project 05K19OD1 for the period 2019-2021, aiming for the commissioning of the instrument and software development. For the latter purpose, a collaboration has been initiated among European TAS multiplexing teams in order to implement a common, user-friendly tool for instrumental resolution calculation, data visualization and analysis.

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