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## Physics program at MESA in Mainz

*Friday, 21 October 2022 09:00 (30 minutes)*

At the institute of nuclear physics in Mainz, the Mainz Energy-Recovery Superconducting Accelerator MESA is currently under construction. The talk will discuss the physics program of this new high-intensity facility. The polarized extracted beam will be used for parity-violation experiments with the P2 setup, in particular a precision measurement of the weak mixing angle  $\sin^2\theta_W$  in scattering off hydrogen, standard model tests in scattering off carbon and a measurement of the neutron skin in scattering off lead. Even higher intensities are available in energy-recovery mode, where the MAGIX spectrometer setup with an internal gas jet target will be used for e.g. form factor measurements and studies of reactions of interest for nuclear astrophysics. The DarkMESA experiment finally will be placed behind the P2 beam dump to search for potential dark matter particles.

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