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Piezoelectric-driven uniaxial pressure cell for muon spin relaxation experiments

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We present a piezoelectric-driven uniaxial pressure cell operable at cryogenic temperatures and optimized for muon spin relaxation and neutron scattering experiments. These methods often require larger sample sizes, and so the cell is designed to generate a force of up to ~ 1000 N. It incorporates calibrated displacement and force sensors, the combined knowledge of which can determine quickly whether the sample and its mounts remain within their elastic limits. An earlier version of this cell was presented in [1] and cells of the current design [2] have accumulated use in multiple beamtimes [3-5], demonstrating its practicality. We anticipate this cell will be useful for a range of other materials, in which the Fermi surface or magnetic interaction strengths can be tuned leading to strong modifications of the electronic state.

References:

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