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# Software Architecture and Hardware Organization in Mu2e Solenoid Field Mapping System

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The Mu2e field mapping system is designed to produce high accuracy field maps of the detector solenoid used in the experiment. The data acquisition system is mobile and uses a self-propelled mapper with rotating arms equipped with 3D Hall probes. The measurements require not only accurate readouts of magnetic field, but also accurate location of all the Hall probes when taking data. The latter is accomplished by using the laser tracker to measure positions of several retroreflectors on the field mapper during data acquisition. The measurement process requires scanning the whole space inside the large solenoid and takes many hours to complete, which necessitates its full automation. The automation software includes control of the mapper, readout of Hall and NMR probes and control of a laser tracker, including prediction of retroreflector positions and execution of quality control checks. The software architecture and data acquisition hardware of the field mapping system are described, with special attention to control of the laser tracker and its integration with the system.

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