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The GEM Tracking Subsystem for Qweak[1] TAMUNA DIDBERIDZE, TONY FOREST, Idaho State University, QWEAK COLLABORATION — A tracking subsystem for the Qweak experiment at Jefferson Lab has been constructed using gas electron multipliers (GEMs) to enable the detection of elastically scattered electrons at high rates. Unlike other similar tracking devices, the GEM based tracking system uses a polar coordinate system and custom designed digitization cards for readout. The coordinate system was chosen to simplify a measurement of the elastically scattered electron's squared momentum transfer. The readout electronics, designed at CERN, may be used by either silicon or GEM based detectors. The compact readout system has a high radiation tolerance and contains 128 readout channels per card. Each channel is sampled up to 40 MHz and is buffered to facilitate readout latencies up to 128 clock cycles. A description of the tracking system and the performance of the readout system will be presented.

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