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Charged Particle Tracking for the GlueX Detector[1] SIMON TAYLOR, Jefferson Lab, GLUEX COLLABORATION — The GlueX experiment is a new experiment under construction at the Thomas Jefferson National Accelerator Facility designed to study gluonic degrees of freedom via the production of "hybrid" mesons with exotic quantum numbers. At full luminosity, the trigger rate is expected to be on the order of 150 kHz and the data rate to tape is expected to be on the order of 300 MB/s. In order to reduce the reconstruction time, the current GlueX analysis framework is multi-threaded such that multiple events can be analyzed in parallel on multi-core machines. The tracking code presents the largest bottleneck in the event reconstruction. By taking advantage of Single-Instruction, Multiple-Data (SIMD) instructions in the three-vector and matrix operations needed in the tracking code, the reconstruction can be sped up considerably. The current status of the tracking reconstruction for GlueX will be presented.

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