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PHENIX Silicon Vertex Detector Software and Kalman Fitting
MICHAEL STONE, J. NAGLE, University of Colorado, PHENIX COLLABORATION — The PHENIX experiment at the Relativistic Heavy Ion Collider recently took data in p+p and Au+Au collisions with a new detector called the "Silicon Vertex Detector." The main purpose of the detector is to measure heavy flavor meson decay electrons near the collision vertex and will thus allow for refined measurement of these processes, in particular the separation of charm and beauty contributions. Part of the work necessary to make this possible is the development of an offline software framework capable of reconstructing hit clusters, tracks, and as follows, entire events. This project covers the C++ objects and methods written to go from the raw data format, to clusters, and then to tracks. Specifically, the process of using Kalman fitting algorithms through a real magnetic field map for track reconstruction will be described. Initial tracking efficiency, momentum resolution, and computation speed will be detailed.

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