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Clustering induced Pattern Recognition in a TPC for the Linear Collider

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ILD is a proposed detector concept for a future linear collider, that envisages a Time Projection Chamber (TPC) as the central tracking detector. The ILD TPC will have a large number of voxels that have dimensions that are small compared to the typical distances between charged particle tracks. This allows for the application of simple nearest neighbor type clustering algorithms to find clean track segments.
Clupatra is a TPC pattern recognition algorithm that uses such clustering methods to find track seeds and then a Kalman Filter to extend these segments to form complete tracks. We present the algorithm and it's performance and track finding efficiency for the ILC, including machine induced backgrounds, as well as for the case of CLIC with much more challenging occupancies that are comparable to those of the ALICE TPC.
Clupatra is written in the iLCSoft framework based on LCIO and Marlin and will be used for the massive Monte Carlo production for the Conceptual Design Report of ILD in 2012.

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