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LArTPC Charge-Light Matching and PID with Wire Cell

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Wire Cell is a reconstruction package under development for event reconstruction in LArTPC. It consists of many components including i) TPC detector simulation, ii) TPC signal processing, iii) 3D image reconstruction, iv) event clustering, v) charge-light matching, and vi) pattern recognition. In this talk, I am going to describe the Wire-Cell techniques on the Charge-Light matching and the particle identification. The many-to-many charge-light matching is based on the compressed sensing technique. The particle identification includes the track trajectory and dQ/dx fits, which use the advanced techniques in graph theory and linear algebra. The development of these techniques are critical to the overall success of event reconstruction in LArTPC.

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