

Abstract Submitted
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Forward Time of Flight Reconstruction Software for CLAS 12¹

ALEXANDER COLVILL, University of Surrey, GERARD GILFOYLE, University of Richmond — Jefferson Laboratory is upgrading its facilities to double the electron beam energy and, among other projects, build a new detector CLAS12 in Hall B. The Forward Time-of-Flight system (FTOF) in CLAS12 is an essential component for particle identification. It is constructed of scintillator strips combined to form large triangular or rectangular panels. Software has been developed to reconstruct signals from the FTOF that enhances existing software written for the previous detector in Hall B. This new software, written in Java, runs in the CLAS 12 Reconstruction and Analysis Framework as a self-contained service. The optimal configuration for this service was determined using simulations of CLAS12 and deep inelastic scattering of 11-GeV electrons from a hydrogen target. It was determined how best to combine signals on adjacent scintillation paddles from a single particle striking an FTOF panel. The key conclusions were that each panel should be treated separately, and that, as it is possible for a single particle to leave signals in more than two adjacent paddles, signals from those adjacent paddles should be combined. With these alterations, efficiency increased by up to 10% compared with existing methods.

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