New Applications of PAX in Physics Analyses at Hadron Colliders

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At CHEP03 we introduced "Physics Analysis eXpert" (PAX), a C++ toolkit for advanced physics analyses in High Energy Physics (HEP) experiments. PAX introduces a new level of abstraction beyond detector reconstruction and provides a general, persistent container model for HEP events. Physics objects like fourvectors, vertices and collisions can easiliy be stored, accessed and manipulated. Bookkeeping of relations between these objects (like decay trees, vertex and collision separation, including deep copies etc.) is fully provided by a "relation manager". Event container and associated objects represent a uniform interface for algorithms and facilitate the parallel development and evaluation of different physics interpretations of individual events. So called "analysis factories", which actively identify and distinguish different physics processes, can easily be constructed with the PAX toolkit.

PAX has been officially released to the experiments CDF (Tevatron) and CMS (LHC) during the last year. It is being explored by a growing user community and applied in various complex physics analyses. We report about the successful application in studies of ttbar production at the Tevatron and Higgs searches in the channel ttH at the LHC.

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