

Short exercise: Long-Lived particles, Tracking and Primary Vertices

- Facilitator(s): Viktor <https://twiki.cern.ch/twiki/bin/view/CMS/SWGuideCMSDataAnalysisSchoolHamburg2018TrackingAndVertexingExercise>
- **sketch of the exercise:** Introduction to using tracks for analyses in the era of large pile-up using recorded CMS data from 2016/2017. Students will learn how to
 - extract basic track parameters and how to reconstruct invariant masses from tracks in CMSSW
 - extract basic parameters of primary vertices. In this high-luminosity era, it is not uncommon for a single event to contain as many as ten to twenty independent collisions. For most analyses, only one is relevant, and it can usually be identified by its tracks.
 - reconstruct secondary vertices in order to measure the Kshort mass
 - **(new)** apply strategies for selecting long-lived particles. Signatures include e.g. displaced vertices, disappearing tracks or slow/highly-ionizing charged particles. Track quality properties and dE/dx information from the tracker are used for the selection.
- **what needs to be done:** update existing exercise from 2015 to 2016/2017 data, add LL particles
- **special technical requirements:** none (will run on a AOD data file with a limited number of events)