

ALICE Track visualisation options for LHC Run 3

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Good quality track visualization is an important aspect of every High-Energy Physics experiment, where it can be used for quick assessment of recorded collisions. The event display, operated in the Control Room, is also important for visitors and increases public recognition of the experiment. Especially in the case of the ALICE detector at the Large Hadron Collider (LHC), which reconstructs up to 2000 tracks per rapidity unit for each Pb-Pb collision, a clear visualization of such collisions is a challenging task.

A new track display algorithm may also replace static 3D snapshots presented in Run-2 and visualize the dynamics of particle collisions.

This is also a snapshot, showing only few events per second, but an animated one. Together with wise selection of the nice event groups it may increase attractiveness of the visualization.

Such animations of particles in the event, which also may appear and fade out, require a well defined graphical framework.

We present the results of comparative tests of different approaches to the topic, with their benefits and limitations. Special considerations were taken to ensure the proper performance of the visualization to avoid frame jams. Modern visualization technologies like Vulkan and shader-based OpenGL were investigated. Traditional ROOT geometry functions were also considered as an option which do not require deeper changes in underlying ROOT library.

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