

Integrating Visualization Applications, such as ParaView, into HEP Software Frameworks for In-situ Event Displays

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ParaView [1] is a high performance visualization application not widely used in HEP. It is a long standing open source project led by Kitware[2] and involves several DOE and DOD laboratories and has been adopted by many DOE supercomputing centers and other sites. ParaView is unique in speed and efficiency by using state-of-the-art techniques developed by the academic visualization community which are not found in applications written by the HEP community. In-situ visualization of events, where event details are visualized during processing/analysis, is a common task for experiment software frameworks. Kitware supplies Catalyst[3], a library that enables scientific software to serve visualization objects to client ParaView viewers yielding a real-time event display. Connecting ParaView to the Fermilab art framework and the LArSoft toolkit (a toolkit for reconstruction and analysis with Liquid Argon TPC neutrino detectors), will be described and the capabilities it brings discussed. We will further discuss introducing a visualization “protocol” and generalizing this capability to other visualization systems.

[1] Ayachit, Utkarsh, The ParaView Guide: A Parallel Visualization Application, Kitware, 2015, ISBN 978-1930934306; <http://www.paraview.org/>

[2] <http://www.kitware.com>

[3] <http://www.paraview.org/in-situ/>

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Tertiary Keyword (Optional)

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