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The Offline Software Framework of the NA61/Shine Experiment

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NA61/SHINE (SHINE = SPS Heavy Ion and Neutrino Experiment) is an experiment at the CERN SPS using the upgraded NA49 hadron spectrometer. Among its physics goals are precise hadron production measurements for improving calculations of the neutrino beam flux in the T2K neutrino oscillation experiment as well as for more reliable simulations of cosmic-ray air showers. Moreover, p+p, p+Pb and nucleus+nucleus collisions will be studied extensively to allow for a study of properties of the onset of deconfinement and search for the critical point of strongly interacting matter.

Currently NA61/SHINE uses the old NA49 software framework for reconstruction, simulation and data analysis. The core of this legacy framework was developed in the early 1990s. It is written in different programming languages (C, pgi-Fortran) and provides several concurrent data formats including obsolete parts in the data model.

In this contribution we will introduce the new software framework, called Shine, that is written in C++ and designed to comprise three principal parts: a collection of processing modules which can be assembled and sequenced by the user using XML, an event data model which contains all simulation and reconstruction information based on ROOT, and a detector description which provides data on the configuration and state of experiment. To assure a quick migration from the Shine framework, wrappers were introduced that allow to run legacy code parts as modules in the new framework and we will present first results on the cross validation of the two frameworks.

Student? Enter 'yes'. See <http://goo.gl/MVv53>

yes

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