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The FairRoot framework

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The FairRoot framework is an object oriented simulation, reconstruction and data analysis framework based on ROOT. It includes core services for detector simulation and offline analysis. The project started as a software framework for the CBM experiment at GSI, and later became the standard software for simulation, reconstruction and analysis for CBM, PANDA, R3B and ASYEOS at GSI/FAIR, as well as the MPD (NICA) at JINR, Russia. Technical design reports, detector studies and physics performance studies are carried out for FAIR experiments based on the FairRoot services. The framework delivers base classes which enable the users to construct their detectors and /or analysis tasks in a simple way, it also delivers some general functionality like track visualization. Parameter handling and data base connections are also handled by the framework. Beside of the the traditional services of an event processing framework, FairRoot deliver also the possibility to run some Tasks on GPU through FairCuda interface. A CMake-CDash building and monitoring system is also part of the FairRoot services. Time ordered simulations are meanwhile possible with FairRoot. In this contribution, the capabilities of the framework and usage of the different services by the experiments will be presented.

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