HEPnOS: Fast Event-Store for High-Energy Physics (HEP)

Goals

- **Manage physics event data** from simulation and experiment through multiple phases of analysis

- **Accelerate access by retaining data in the system throughout analysis process**

- **Reuse components from Mochi ASCR R&D project**

Properties

- **Read in data at start of run and write results to persistent storage at the end of a campaign**

- **Hierarchical namespace matching physics concepts (datasets, runs, subruns)**

- **C++ API (serialization of C++ objects)**

- **Write-once, read-many**

RPC ➡️ RDMA ➡️

The HEPnOS event store is built using Mochi, a framework for developing specialized data services for use in HPC. Mochi allows use of state of the art libraries (e.g., LevelDB for key/value storage) while providing convenient APIs to scientists.