# **DUNE Analysis Data in RNTuple**

### **Amit Bashyal Argonne National Lab**

May 08, 2024













### Flat CAF Generation Process



#### SRProxy/FlatBasicTypes

Creates Flat CAF Data model based on TTree Total 9 TTree Instances

#### SRProxy/BasicProxyTypes

Functions to interact with Flat CAF ntuple (operator overloading, I/O, memory management etc) Total 16 TTree Instances

#### gen\_srproxy

Python macro that uses FlatBasicTypes and BasicProxyTypes to generate Flat **CAF Objects** Auto generation of Flat SR classes

#### **Flat SR Classes**

Each SR Object represented as FlatSR Object class. Auto generated by gen\_srproxy











## HEP-CCE

# Replacement of TTreeFormula in RNTuple

- CAFAna uses TTreeFormula to create proxy readers if the CAF is written in flat ntuples.
- There is no TTreeFormula Equivalent.
- Working on this.
- Can build and run CAF Maker in Perlmutter so testing and improving will be easier.
- Goal is to deliver CAFRNTuple Reader/Writer integrated within ND-CAFMaker.
- Note that the CAF Data model as itself can be persisted in RNTuple.









