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ROOT RNTuple implementation in Julia programming language

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At the LHC experiments, RNTuple is emerging as the primary data storage solution, and will be ready for production next year. In this context, we introduce the latest development in UnROOT.jl, a high-performance and thread-safe Julia ROOT I/O package that facilitates both the reading and writing of RNTuple data.

We briefly share insights gained from implementing RNTuple Reader twice: first in Python, and then in Julia. We discuss the composability of the RNTuple type system and demonstrate how Julia's multiple dispatch feature has been effectively employed to realize this concisely.

Regarding the implementation of RNTuple Writer, we outline the current capabilities and illustrate how they support end-user analyses. Furthermore, we present a roadmap for future development aimed at achieving seamless data I/O interoperability across various programming languages and libraries, including C++, Python, and Julia.

Lastly, we showcase the capabilities and performance of our Julia implementation with real examples. We highlight how our solution facilitates interactive analysis for end-users utilizing RNTuple.

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