

# HS3 - A serialization standard for statistical models in high energy physics

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An important aspect of experimental particle physics, and science in general, is to perform analyses in a reproducible way. In addition to providing the observational data, this also means that the statistical models, which are usually formulated in terms of likelihood functions, must be provided in an accessible form as well. Currently, sharing statistical models between different programs and communities can be cumbersome because there is no standardized exchange format. Different software packages and toolkits usually use fundamentally different ways for representing data and models. We present the "high energy physics serialization standard"(HS3), a proposed standard, which is a language-agnostic and software-independent format for saving statistical models in exchangeable files. HS3 makes it possible to share entire analyses and to use them across software frameworks and methods so results can be cross-checked and models can be reused in new contexts. We give a general introduction to the HS3 standard, its design philosophy and semantics. In addition, we focus on the ongoing implementation of HS3 in ROOT, in Python, and the Julia programming language for use in packages like BAT.jl.

## Title

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