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Spey: smooth inference for reinterpretation studies

Thursday 12 October 2023 14:30 (30 minutes)

Statistical models are at the heart of any empirical study for hypothesis testing. We present a new cross-platform Python-based package which employs different likelihood prescriptions through a plug-in system. This framework empowers users to propose, examine, and publish new likelihood prescriptions without developing software infrastructure, ultimately unifying and generalising different ways of constructing likelihoods and employing them for hypothesis testing, all in one place. Within this package, we propose a new simplified likelihood prescription that surpasses its predecessors' approximation accuracy by incorporating asymmetric uncertainties. Furthermore, our package facilitates the inclusion of various likelihood combination routines, thereby broadening the scope of independent studies through a meta-analysis. By remaining agnostic to the source of the likelihood prescription and the signal hypothesis generator, our platform allows for the seamless implementation of packages with different likelihood prescriptions, fostering compatibility and interoperability.

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