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Reinterpretation Enhancements with Rivet v4

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The Rivet framework is widely used for analysis preservation and Monte Carlo validation, featuring around 2000 analysis routines, and is primarily used in BSM reinterpretation through the measurement-focused Contur method and tool. However, it is much less established in preservation of BSM searches, despite possessing the essential features such as detector "smearing" of physics objects, and cutflow computation. In this talk we review the major developments in the new Rivet version 4 and its underlying statistics library YODA2, which provide more coherent statistical breakdowns of MC predictions (including automatic propagation of theory uncertainties) and improvements for high-performance computing deployments. We will also present a new user-facing interface and tools designed to reduce entry barriers for BSM-search physics users, and streamline the preservation of BSM analyses in the Rivet collection.

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