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3ML: The Multi-Mission Maximum Likelihood Framework

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As the multi-messenger era is now fully active, it is crucial that the community has a framework within which to analyze data from multiple messengers, wavelengths, and instruments in a statistically robust, common way. 3ML (https://threeml.readthedocs.io) provides an abstract, plugin-based data interface for instruments to combine analysis through each instrument's own unique likelihood. As a Python-based tool, users and instrument teams can create or use existing plugins to interface their data to a plethora of Bayesian and optimization packages in a uniform way. Analysis results are reported and stored in portable file formats that allow for the sharing and replication of results in a way that provides observers to produce robust scientific results that the community can interpret. 3ML currently supports via standard plugins many ground and space-based observatories as well as being the primary analysis tool for some collaborations. In my talk, I would like to demonstrate the capabilities and philosophy of 3ML as well as encourage instrument teams to join in the development of new plugins for a variety of instruments.

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