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Active Learning for Gravitational Wave modelling

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Abstract: As a new era of gravitational wave detections rapidly unfolds, the importance of having accurate models for their signals becomes increasingly important. The best model for GW are the fully-fledged simulations of General Relativity, although their daunting cost makes it prohibitive to perform data analysis. To alleviate this, the community has developed a variety of approximate models, which upon calibration from the detailed simulations are accurate and fast to evaluate. This program requires the exploration of a large and complex parameter space with expensive simulations. We will argue that Active Learning, a data-driven strategy to explore parameter space with costly experiments, is particularly relevant in this scenario, by reducing computational cost, time and human bias.

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