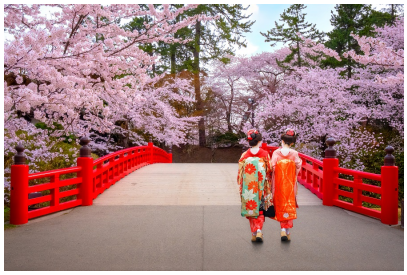

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Machine learning for gravitational wave inference

mardi 28 mars 2023 09:00 (25 minutes)

A major bottleneck in the analysis of current and future gravitational wave detector data is the computational cost of parameter inference. This is largely driven by the cost of computing physically complete gravitational waveforms. There are various ways that this problem can be tackled, ranging from accelerating the evaluation of waveform models to reducing the number of waveform evaluations needed in any given parameter estimation calculation. In recent years machine learning methods have been applied to this problem and these are starting to reach maturity. In this talk I will describe DINGO, a machine learning method based on normalising flows that can directly generate samples from GW parameter posteriors given observed data as input. I will show that DINGO can produce results indistinguishable from those generated by standard approaches, but in a small fraction of the time. I will discuss techniques for verifying these results, and outline prospects for the future extension of this work.

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