

Importance nested sampling with *nessai* for gravitational-wave inference

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Nested sampling is a crucial tool for gravitational-wave data analysis. However, it is often computationally expensive, especially for high-dimensional and complex parameter spaces. This poses a challenge for applications to LISA data analysis. It has been shown that *nessai*, a nested sampling algorithm that incorporates normalising flows, can accelerate gravitational-wave inference four-fold compared to *dynesty* whilst producing statistically identical results.

In this talk, we present an improved version of *nessai* which addresses the main computational bottlenecks. To achieve this, we draw on previous work and modify the core nested sampling algorithm to incorporate importance weights. We demonstrate that these modifications eliminate the aforementioned bottlenecks and that the new algorithm is an order of magnitude faster than *dynesty* when applied to gravitational-wave inference.

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