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【485】 Accelerating global parameter estimation of gravitational waves from Galactic binaries using a genetic algorithm and GPUs

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The Laser Interferometer Space Antenna (LISA) is aimed to measure gravitational waves in the milli-Hertz frequency band, which is dominated by millions of Galactic binaries. While some of these binaries produce signals that are extractable, most of them blur into a confusion foreground. We introduce a new approach to extract the best-fitting solutions for Galactic binaries across the entire frequency band from data with multiple overlapping signals. Furthermore, we use these best-fitting solutions to omit the burn-in stage and to take full advantage of GPU-accelerated signal simulation, allowing us to compute posterior distributions in just 2.3 seconds per signal on a laptop-grade GPU.

Theoretical Work

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