

## **BlackHoles@Home: Binary Black Hole Calculations on Consumer-Grade CPUs**

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BlackHoles@Home aims to fit numerical-relativity-based binary black hole (BBH) calculations on a consumer-grade desktop computer, enabling gravitational waveform follow-ups and catalogs at unprecedentedly large scales using volunteer computers. This efficiency stems from super-efficient bispherical-like numerical grids coupled to a new, covariant reference-metric formulation of BSSN in singular coordinate systems. We demonstrate that recent improvements to our techniques and the underlying infrastructure (NRPy+) enable the final orbits of a BBH and post-merger to be calculated on a cellphone CPU, in full 3+1 dimensions, with gravitational waveform extraction. Combined with recent advancements to modeling wider separation binaries, we anticipate BlackHoles@Home to be launched worldwide in the very near future.

<http://blackholesathome.net/>

<http://nrpyplus.net/>