

Core-Collapse detection rates from Einstein Telescope

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Gravitational waves offer a promising opportunity to investigate the explosion mechanism behind the Core-Collapse Supernovae, as they are expected to originate from the oscillations of the proto-neutron star formed during the collapse. The third-generation detector Einstein Telescope (ET), with its sensitivity to low-frequency signals, could detect GW signatures from Core-Collapse Supernovae.

In this talk, I will present our preliminary estimate of Core-Collapse Supernova detection rates (CCSNR) for the ET within the Milky Way and the Magellanic Clouds. Our estimates are based on observational data and massive star distributions modeled with TRILEGAL. Additionally, by utilizing simulated gravitational waveforms from CCSNe and the GWFISH simulation software, we analyzed SNR-weighted density maps and determined the detection horizon for these signals.

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