

# Estimating the Detection Horizon for Core-Collapse Supernovae

*Tuesday 7 May 2024 18:06 (1 minute)*

Core-collapse supernovae are one of the most anticipated gravitational wave sources in the frequency band of the Einstein Telescope (ET). A detection of such an event can provide crucial information on the processes occurring during the final stages of massive stars and open perspectives in multi-messenger astronomy. Compared to current detectors, capable of measuring supernovae within a fraction of our galaxy, the improved sensitivity of ET will significantly increase the observable volume and, therefore, the expected event rate. Likelihood-based matched filtering gives an upper-limit estimate of the detection horizon for core-collapse supernovae. However, due to the highly stochastic nature of the core-collapse process, matched filtering is not applicable in burst searches. Thus, non-template-dependent methods are additionally investigated.

**Primary authors:** BACHLECHNER, Markus (RWTH Aachen University); Dr BIRKENFELD, Thilo (RWTH Aachen University); Mr BUTZ, Timo (RWTH Aachen University); STAHL, Achim (RWTH Aachen University)

**Presenter:** Mr BUTZ, Timo (RWTH Aachen University)

**Session Classification:** Posters

**Track Classification:** Observational Science Board (OSB)