
Contribution ID: **61** Type: **Poster**

# Quark matter nucleation within cold nuclear matter

*Monday, 21 May 2018 18:30 (0 minutes)*

The formation of quark matter in core-collapse supernovae and neutron star mergers could leave interesting observable imprints on the resulting electromagnetic, gravitational and neutrino emissions. In fact, simulations
have shown that the early formation of quark matter could have a significant impact upon the dynamics of core-collapse supernovae, including a characteristic second neutrino burst. Nevertheless, first-order transitions
demand time and the possibility of phase conversion depends on whether the available timescales, of tens to hundreds of milliseconds, are long enough for nucleating quark-matter droplets. We estimate
the surface tension and nucleation time for the high-density transition between nuclear and chirally symmetric
matter within a nucleon-meson model. While these quantities have been calculated before, our results are the first to simultaneously consider both chiral symmetry and nuclear saturation in a cold and dense environment.

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**Session Classification:** Poster Session