

A low-frequency radio view of supernovae with LOFAR

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Supernovae are the end stages of stellar evolution, resulting in enormous energy release. They have a great impact on their environment, help us understand stellar and galactic evolution, shock physics and radiative processes, and are linked to life on earth. In the radio, synchrotron radiation from the interaction of the supernova ejecta with the dense circumstellar material is visible. Supernovae have not yet been studied at the low radio frequencies probed by Low Frequency ARray (LOFAR; van Haarlem et al. 2013), and this opens up uncharted territory, including new physics that might dominate low frequency radio emission from supernovae. With Morabito et al. 2021 (soon to be published), LOFAR enters a regime where sub-arcsecond imaging with the International LOFAR Telescope could become routine. In this talk, we present ongoing work of supernovae studies with the LOFAR-VLBI strategy.

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