Contribution ID: **54** Type: **Oral Presentation**

Looking for dust in core-collapse supernovae with a Bayesian approach

Dust plays a key role in fundamental astrophysical processes, while, supernova (SN) explosions provide an exceptional opportunity to examine both the final explosions of massive stars and their impact on their circumstellar environment. Furthermore, theoretical expectations and observations advocate that a significant amount of dust can be produced during or before SN explosions. Nevertheless, while several thousand days post explosion, SNe powered by the decay of radioactive isotopes, late-time mid-infrared excess can be attributed to newly-formed and/or pre-existing dust grains.

We aim to investigate in the multidimensional parameter space of different types of dusty SNe and interpret our models using a Bayesian inference framework. This approach enables us to characterize the posterior probability distribution of models, hence determine the most probable regions of the parameter space and reveal the possible degeneracies between parameters. We fit smooth and clumpy numerical models to the IR spectral energy distributions with the MOCASSIN (MOnte CArlo SimulationS of Ionized Nebulae) radiative transfer code and examine the physical parameters of the dust (e.g. mass, location, grain sizes and species). For sampling, we apply a Markov Chain Monte Carlo (MCMC) algorithm using the "emcee" package in Python.

Length of presentation requested

Oral presentation: 8 min + 2 min questions (Poster-type talk)

Please select between one and three keywords related to your abstract

Stellar explosions and mergers - observations

2nd keyword (optional)

3rd keyword (optional)

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