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## **DEATHSTAR - A new hope for accurate mass-loss-rate estimates**

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Asymptotic giant branch (AGB) stars are agonising cool giants that lose mass through spectacular stellar winds. The gas and dust ejected through the winds create a chemically-rich expanding envelope around the star, namely the circumstellar envelope (CSE), and eventually enrich the interstellar medium. The mass loss is the most crucial process that determines the fate and the galactic-chemical-enrichment contribution of AGB stars. DEATHSTAR is a large project aimed at improving the accuracy of wind-parameter measurements using high-quality CO observations from ALMA towards the CSEs of nearby AGB stars. These are used as constraints and combined with detailed radiative transfer (RT) modelling of the observed CO to obtain reliable mass-loss-rate (MLR) estimates. Solving the RT through the cool, low density CSE requires a non-LTE approach. We use a Monte-Carlo method that takes into account the geometry, the velocity fields and the heating/cooling properties of the studied gas to obtain its level population. I will give an overview of the current state of the DEATHSTAR project and present the RT outputs, including the better-constrained dust and gas MLRs, the radial kinetic gas and dust temperature in the CSE, and the size of the molecular envelopes in the CSEs of AGB stars.

**Primary author:** ANDRIANTSARALAZA, Miora (Uppsala University)

**Co-author:** Dr RAMSTEDT, Sofia (Uppsala University)

**Presenter:** ANDRIANTSARALAZA, Miora (Uppsala University)

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