

Dusty Outflows: linking theory to observations

PI: Elisabetta Rigliaco

Budget: 20000 euro

Scientific aim of the minigrant:

developing a dust evolution model that accounts for the dusty outflows signatures seen around young stars.

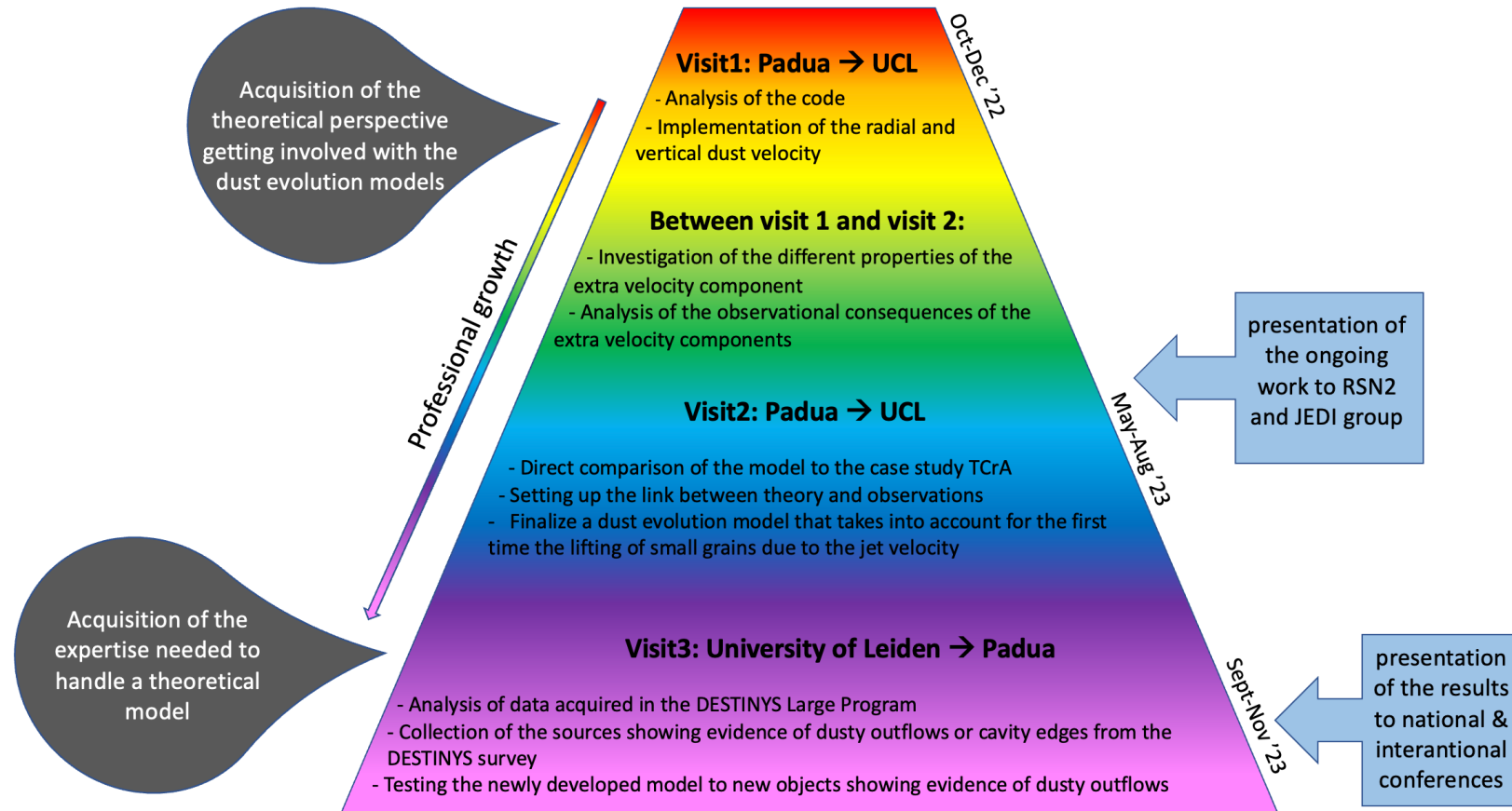
Main soft deliverable of the minigrant:

create a network between international collaborators of the following institution UCL/INAF/Galway-University AND acquisition of theoretical expertise in dust evolution models.

Main hard deliverable of the minigrant:

production of scientific manuscript and dissemination in national/international conferences.

Workflow chart submitted



With respect to the workflow chart above, we must shift the deliverables of a few months since the minigrant arrived later than the end of 2022.

We have implemented numerical simulations of gas and dust evolution in disks that model the removal of small dust from the disk surface for the case study TCrA. The results look promising, providing information on the quantity and quality of the dust engaged in the flow.

Scientific goals achieved so far:

- the paper containing the observational results of the case study TCrA has been published (Rigliaco et al. 2023).
- the PI of the minigrant has studied and analyzed the model that accounts for dust dynamics and dust coagulation processes. This is a needed propedeutical step.
- the PI, in collaboration with colleagues Paola Pinilla (UCL) and Matias Garate (MPIA), have implemented the theoretical model for the case study TCrA. In particular, the key parameters to determine the mass loss according to the proposed geometry have been considered.

Progress:

The first part of the project (study of the theoretical model and implementation of the code for the case study) is essentially done, and the paper containing the results is being written.

Next steps, will be to enlarge the sample to other targets. The work has already started.

Objective of the minigrant:

- The main objective of the minigrant, namely “allowing the PI a strong enhancement of her expertise, to be then used within her home institution”, has been already achieved, but it can be completely fulfilled in the next year.

Critical issues:

- No important critical issues on the project have been found. However, the minigrant would benefit from a rimodulation of the funds, that would allow to buy a computer to run the dust evolution and radiative transfer model linked to the project, since less travelling than the one foreseen when submitting the minigrant have been necessary. The request will be submitted to the DS.