

## What we know and we do not know about light scattered by “small” cosmic dust grains. An experimental Approach

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We present a selected review of laboratory measurements of one or more elements of the scattering matrix of ensembles of randomly oriented cosmic dust analogues in air. Recent measurements on single mm-sized cosmic dust grains [1] are also presented. The measurements are performed at visible wavelengths at the COsmic DUst LABoratory (CODULAB) located at the Instituto de Astrofísica de Andalucía in Granada, Spain [2].

The usefulness of the experimental data in providing information on the physical properties of dust particles is demonstrated by means of some examples. The main purpose of this talk is to show how experimental data of intensity and polarization of the scattered light of different cosmic dust analogues can be used to shed some light on the nature of cosmic dust particles. However, there are still many open questions that call for the development of advanced numerical techniques to fully understand the experimental data. The combination of computational and experimental data approaches can create synergy to the benefit of each of them. This creates more insight, data and useful ideas that can be obtained from experimental means alone.

### REFERENCES

- [1] Muñoz, O.; Moreno, F.; Guirado, D.; Ramos, J.L.; Volten, H.; Hovenier, J.W. *Icarus*, **211** (2011) 894-900.
- [2] Muñoz, O., Moreno F, Guirado, D., Min, M., Hovenier, J.W. *ApJ*, (2017), in press.

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