

---

# Low-amplitude, short-timescale photometric variability in a sample of M dwarf stars

Giovanni Bruno<sup>\*1</sup>, Isabella Pagano<sup>1</sup>, Gaetano Scandariato<sup>1</sup>, and Cheops Consortium

<sup>1</sup>INAF - Osservatorio Astrofisico di Catania – Italy

## Abstract

We used ESA's CHAracterising ExOPlanet Satellite (CHEOPS) to monitor the short-term photometric variability of 133 late K and M dwarf stars, including some which were selected from exoplanet-search radial velocity follow-up catalogues. With CHEOPS's high-cadence observing mode, we obtained measurements every 3 seconds and a median uncertainty of 1 part per thousand per data point in our  $V < 12$  sample. This allowed us to probe the parameter space of stellar flares down to energies and durations to-date unexplored in optical bands. Our study included the search for pre-flare flux drops, which have rarely been observed for particularly active stars. We carried out the same analysis on 20-second, publicly available TESS light curves for the same targets.

This work will help complement searches focused on more energetic flares. By depicting a more complete picture of cool stars high-energy events, it will contribute to the understanding of stellar activity and of its relationship with the environment exoplanets live in.

---

<sup>\*</sup>Speaker