



Royal
Astronomical
Society

RAS Herschel Medal 2022
Professor Catherine Heymans

The 2022 Herschel Medal is awarded to Professor Catherine Heymans.

Professor Catherine Heymans is a world-leading observational cosmologist, internationally recognised as a key founder of the use of weak gravitational lensing as a cosmological tool. She has been a driving force in observational cosmology and weak gravitational lensing for many years, and has pushed forward the field through her insight, leadership, and attention to detail.

Her recent work leading a detailed analysis combining cosmic shear, galaxy clustering and the cross-correlation of source galaxy shear with lens galaxy positions has resulted in state-of-the-art estimates of the values of fundamental cosmological parameters. By combining data from the ESO Kilo-Degree Survey (KiDS-1000), the Baryon Oscillation Spectroscopic Survey (BOSS) and the spectroscopic 2-degree Field Lensing Survey (2dFLenS), Professor Heymans and her team have been able to break parameter degeneracies from the individual probes and determine significantly tighter constraints on cosmological parameters.

The parameters determined by Professor Heymans and her team continue the trend of lower values for the amplitude of the primordial density perturbations, from which cosmic structures grow, inferred from weak-lensing measurements compared to those deduced from observations of the cosmic microwave background (CMB) radiation, adding further evidence for the tension between direct astronomical measurements in the low-redshift universe and those from CMB anisotropies at high redshift measured by Planck. Together with independent measurements of the Hubble parameter, these ground-breaking results could indicate that our fundamental theories of the Universe are missing a fundamental ingredient.

For these reasons, Professor Catherine Heymans is awarded the 2022 Herschel Medal.

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