

Thomas Collett: 2020 Winton Award

Dr Thomas Collett's research focuses on cosmological and astrophysical applications of strong gravitational lensing. In particular, exotic lensed systems: systems with multiple background sources, low and high redshift lenses, lensed supernovae and lensed quasars

The productivity, range and versatility of Dr Collett's work at this stage of his career is striking. Dr Collett has been highly successful in obtaining new cosmological constraints on fundamental physics using lensing. He was able to measure the behaviour of dark energy with a double source-plane gravitational lens, which has established these objects as vital probes of cosmology in ways that largely avoid the usual problems of mass degeneracy. Recently, he has precisely measured the 'gravitational slip', describing how space and time are distorted by gravity.

Another important aspect of Dr Collett's career is his level of involvement in front-line collaborations. Dr Collett leads the strong lensing group for the Large Synoptic Survey Telescope's Dark Energy Science Collaboration, which will be at the forefront of lensing science in the 2020s. He has developed the LensPop code, which is used widely to train methods for finding strong lenses. Dr Collett's expertise in statistical lens simulations and lens analysis will make him well placed to exploit the expected discoveries from the Large Synoptic Survey Telescope and the Euclid space telescope.

As well as this stellar research record, Dr Collett demonstrates the leadership, maturity and mentoring ability needed in a young researcher who will be a future leader of the research community.

For these reasons, Dr Thomas Collett is awarded the Winton Award.

Short version

Dr Thomas Collett has measured the behaviour of dark energy with a double source-plane gravitational lens, establishing these objects as vital probes of cosmology and he has precisely measured the 'gravitational slip', describing how space and time are distorted by gravity. Collett also leads the strong lensing group for the Large Synoptic Survey Telescope's Dark Energy Science Collaboration.

For these reasons, Dr Thomas Collett is awarded the Winton Award.