

## **Bio**

Dr. Oisín Creaner is a recent recruit to DCU's School of Physical Sciences. He did his undergraduate studies in Physics with Astrophysics at Trinity College, Dublin, graduating in 2007. He was awarded a PhD in Computational Astrophysics from what was then the Institute of Technology, Tallaght (ITTD - now TU Dublin) in 2017. In the mean time, he taught physics and computer science at Dublin Institute of Technology (DIT - now also TU Dublin) and National College of Ireland (NCI) between 2013 and 2018. Between 2018 and 2019, and later from 2021-2023 he worked as a postdoc at the Dublin Institute for Advanced Studies (DIAS) developing software first to analyze the performance of the LOFAR radio telescope, then later for the readout of MKIDs superconducting photon detectors. Between those stints at DIAS, he worked on simulations of the LZ dark matter detector at Lawrence Berkeley National Lab (LBNL) in the USA from 2019-2021, coincident with the CoViD-19 pandemic and lockdowns.

His research has covered the spectrum from low energy radio to high-energy astroparticle detectors, but his passion has been for exoplanet observations. At DCU, he plans to develop a team with a holistic approach to exoplanet science, as he has worked with everything from citizen science projects like NASA/JPL's Exoplanet Watch to ESA's forthcoming ARIEL space telescope.

## **Abstract**

This talk focuses on Dr. Creaner's plans to develop a research group over the next couple of years here at DCU. This group will examine several aspects of exoplanet observation which are mutually supporting, in particular the use of high-performance, ground- and space-based telescopes for cutting-edge observations and deep examination of exoplanets, and smaller, less capable but more widely available telescopes for supporting observations. While there is an essential role for instruments across this spectrum, there can seem to be a gap in communication between what should be mutually supporting systems.

The role envisaged for the research group here at DCU is to bridge some of these gaps by providing integrated online services for research communities.

At the plentiful but modestly capable end of the spectrum, this group will engage with citizen science projects such as the NASA/JPL Exoplanet Watch project to observe exoplanet transits with privately held telescopes as small as 0.15m, as well as forthcoming arrays of small telescopes. Observers here benefit from online platforms to identify optimum targets and fields of view to observe, and online data processing systems.

At the other end of the scale, forthcoming survey systems such as LSST are expected to generate huge numbers of transient alerts requiring rapid follow up, and the valuable time of space telescopes such as JWST and ARIEL must be preserved by ensuring their scheduled observation of exoplanets is timed correctly.

This group will engage across multiple domains, including observation planning, modelling and analysis, and harness high-performance computing resources and talent to achieve these goals.