

Involving School Students in Exoplanet Research Through the Twinkle Space Mission - ORBYTS

William Dunn (1,2), Katy Chubb (1), Marcell Tessenyi (1), Jonathan Tennyson (1), Tomas James (1), Daniel Darby (1), Maria Niculescu-Duvaz (1), Romain Meyer (1), Jonathan Holdship (1), Jack Baker (1), Jana Smutna (1), Mala Virdee (1), Sian Brannan (1), Giovanna Tinetti (1), Anita Heward (1), Clara Sousa-Silva (4), Laura McKemmish (5), Maire Gorman (6), Tom Rivlin (1)

(1) University College London, London, UK,

(2) Mullard Space Science Laboratory, University College London, Dorking, UK

(3) Imperial College, London, UK

(4) Earth, Atmospheric and Planetary Sciences, MIT, Cambridge MA, USA

(5) University of South Wales, Sydney, Australia

(6) Aberystwyth University, Aberystwyth, UK

Please make sure that your pdf conversion results in a document with a page size of 237 x 180 mm!

Abstract

ORBYTS^{1,2,3} (Original Research By Young Twinkle Scientists) is the flagship outreach programme for the Twinkle space mission (launch: 2021), which will be the first spacecraft dedicated to studying the atmospheres and conditions of newly discovered planets. We believe that all school students should have the opportunity to become involved in active scientific research and to be culturally connected to space missions. To achieve this, ORBYTS partners dynamic, passionate science researchers with secondary schools, where, through fortnightly school visits over an academic year, the researcher facilitates pupil involvement in active science research. The goal of every partnership is that school students will have the opportunity to contribute towards publishable research.

By partnering schools with relatable researchers we hope that the programme will not only improve student aspirations and scientific literacy, but will also help to address diversity challenges by dispelling harmful stereotypes and will provide teachers with relevant exciting CPD at a time when the UK is chronically short of specialist physics teachers.

In the three years since ORBYTS launched, we have had tens of school pupils contribute to scientific papers and listed as co-authors on these works. In 2017-2018 academic year, we have 14 researcher-school partnerships and ~100 pupils involved in the programme. Currently, school students are actively

working on research topics including: conducting and analysing their own exoplanet observations, spectra from star and planet forming regions and developing theoretical lists of molecular spectra applicable to both industry and exoplanet atmospheres (through UCL's ExoMol project). We hope this will continue our excellent school student publication record.

The ORBYTS programme is one that embraces a symbiotic relationship between research and outreach. Researchers involved report that they learn not only leadership and management skills, but also are provided with practical communication training applicable to their own research. They also receive remuneration for their time.

For Sept 2018, we hope to continue to grow the programme in order to further the positive impact the programme seems to be having on all involved. If you are a teacher or an active researcher, please do visit our poster or drop us an email if you are interested in becoming involved.





[3] <http://www.twinkle-spacemission.co.uk/orbyts/>



Figures: images of some the ORBYTS schools and tutors in action and during the end of year school conference and start of year launch event respectively.

References

- [1] Sousa-Silva, Clara, et al. "Original Research By Young Twinkle Students (ORBYTS): when can students start performing original research?." *Physics Education* 53.1 (2017): 015020.
- [2] McKemmish, Laura K., et al. "Bringing pupils into the ORBYTS of research." *Astronomy & Geophysics* 58.5 (2017): 5-11.