ORBYTS

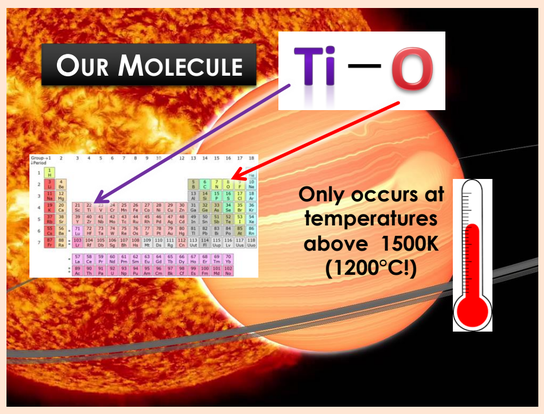
Linking dynamic, passionate PhD & postdoc scientists with school pupils to contribute original, meaningful research to support the Twinkle Space Mission

Twinkle – A mission to Unravel the Story of Planets in Our Galaxy

Twinkle is a UK-led space mission that will launch in 2020. It is the first mission dedicated to using spectroscopy to decode the light from planets outside of our solar system (exoplanets). By doing this, Twinkle will reveal the chemical composition, atmospheres, weather and history of hundreds of newly discovered worlds.

WHAT IS ORIGINAL RESEARCH BY YOUNG TWINKLE SCIENTISTS (ORBYTS)?

- Twinkle has a list of target planets it will observe. We have been offering school pupils the chance to enrich our understanding of these new worlds and to help us ensure the target list is the best it can be.
- This provides a unique opportunity for pupils to undertake cutting-edge science that provides a meaningful impact to a future space mission.



- Pupils have been helping to categorise unique signatures ('spectra') of molecules that Twinkle may detect in our "MARVEL" and "DC" projects
  (Measured Active Rotation-Vibration Energy Levels) (Diatomic Constants)
- Last year's cohort had their hard work published in a scientific journal

School Pupils

Their School

MARVEL analysis of the measured high-resolution rovibronic spectra of $^{48}Ti^{16}O$

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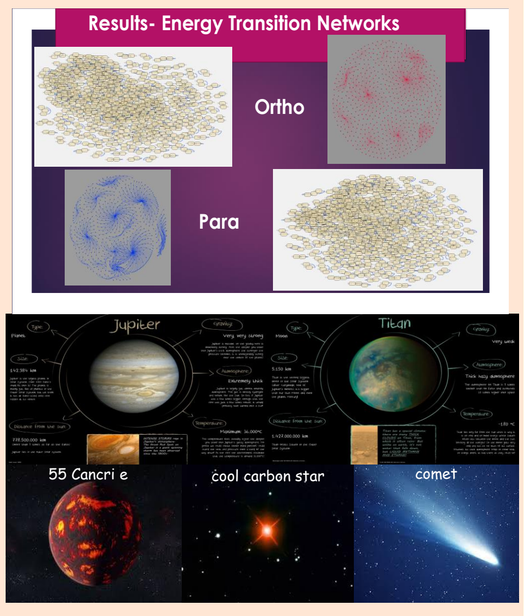
ABSTRACT

Accurate, experimental rovibronic energy levels, with associated labels and uncertainties, are reported for 11 low-lying electronic states of the diatomic $^{48}Ti^{16}O$ molecule, determined using the MARVEL (Measured Active Rotational-Vibrational Energy Levels) algorithm. All levels are based on lines corresponding to critically reviewed and vali-



@twinkle_mission

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HOW DOES ORBYTS WORK?

Fortnightly meetings with 4-8 pupils and ORBYTS tutor at school

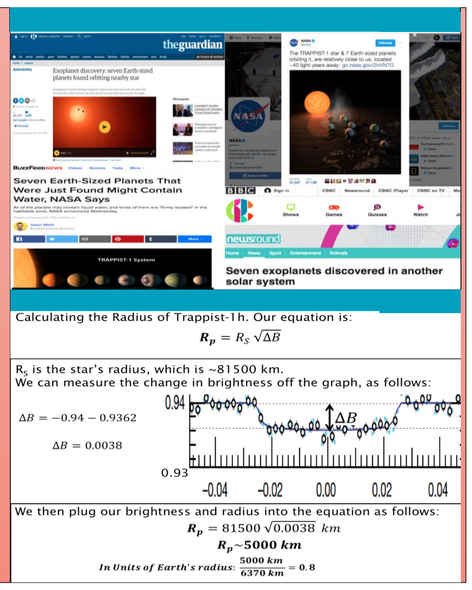
Presentations, special closing ceremony

This year students met British astronaut Helen Sharman!

WHAT'S NEXT?

- Expand successful MARVEL, DC projects
- Launch transiting exoplanet project, offering pupils chance to explore archival data and use our partner observatories to conduct their own exoplanet observations

Example tutor slide resources for the project:



We're looking for more passionate researchers to join us!

Twinkle and ORBYTS will support this by providing: enthusiastic schools, training, resources, payment, the opportunity to inspire the next generation of scientists AND the best leadership and communication training: teaching school children!

Contact: orbyts@twinkle-spacemission.co.uk for more details

We're looking for schools and teachers to get involved!

Want to get involved in real scientific research? Want to expand your school's outreach activities? We want enthusiastic teachers and educators to help us to deliver this project to as many students as possible across the UK! Ask us about how you can get involved!

Contact: orbyts@twinkle-spacemission.co.uk for more details