
New frontiers in optical space metrology

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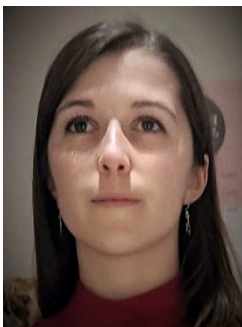
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Accurate metrology instrumentation is key for successful space missions. From large-scale telescopes to rendezvous and docking, knowledge of position is vital. Two distinct examples of such instrumentation – FLLS and LEIA – are being designed, built, and tested by Neptec UK, in collaboration with Surrey Space Centre.

FLLS – the Fine Lateral and Longitudinal Sensor – is being developed for the European Space Agency (ESA) mission, PROBA-3. PROBA-3 is the world's first precision formation flying mission, and will study the solar corona. Two satellites will fly in formation, 150 m apart, to form a coronagraph instrument. FLLS will use a modulated laser and beam tracking to measure the relative displacement between the two satellites to within 300 μm .

LEIA – the LIDAR for Extra-terrestrial Imaging Applications – is the landing sensor for the Luna 27 mission, and the first of its kind. Luna 27 is a joint ESA-Roscosmos mission to land at the lunar south pole to search for minerals and water. LEIA enables the lander to avoid uneven terrain by providing 3D mapping of the lunar surface during landing. LEIA will achieve a resolution of 0.04 degrees when imaging from 1.3 km above the lunar surface.

This talk will present a summary these missions, an overview of the instruments and their roles, and the progress of our work on them.



Short Bio:

Miranda Bradshaw is a postdoctoral researcher at the University of Surrey. She is working as the Associate in a Knowledge Transfer Partnership with Neptec UK, developing novel optical instruments for space. She holds a PhD in Astrophysics, specializing in optical metrology instrumentation for space applications.