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Late breaking abstracts (LBA)

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FIRST LASER BEAM TO ORBIT DEMONSTRATIONS, MODELLING SPACECRAFT AND REFLECTOR, BEAM LASER PROPULSION MISSIONS

Abstract

Laser demonstrations beam energy toward spacecraft in MEO/GEO by Summer/Fall 2023. A 50-100kg payload, reflector, solar sail, and spacecraft are launched into elliptical orbit above Trans-MEO for rendezvous. A 3kW-1+ MW laser is pulsed to ¡5m spot size on target and focused into a propellant heating chamber with up to 300-500kg of hydrogen gas to reach up to 30,000 K and 1000 - 3000s specific impulses (Isp). A COTS fibre-optic laser around 1-2 m beams coherent photons for ¡ four hours to the reflector. Founded in Spring 2022, BeamLaunch brings 20+ years in electronics, optics, and space systems representing 8+ organisations in collaboration with USSF, NSF, NASA that plans to design, build, and operate first commercially available high power laser and launch LTP facility. The first vertical laser beam to orbit demo accelerates an on-orbit spacecraft as a stepping stone to revolutionise launch industry and democratise access to space.