

Study progress on ASTROD and ASTROD I

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Over the next decade the gravitational physics community will benefit from dramatic improvements in many technologies critical to the tests of gravity and gravitational-wave detection. The highly accurate deep space navigation, interplanetary laser ranging and communication, interferometry and metrology, high precision frequency standards, precise pointing and attitude control, together with the drag-free technologies will revolutionize the field of the experimental gravitational physics. Deep-space laser ranging will be ideal for gravitational-wave detection, and testing relativity and measuring solar-system parameter to an unprecedented accuracy. ASTROD I is such a mission with single spacecraft; it is the first step of ASTROD (Astrodynamical Space Test of Relativity using Optical Devices) with 3 spacecraft. In this paper, we will present the progress of ASTROD and ASTROD I with emphases on the acceleration noises, mission requirement, charging simulation, drag-free control and low-frequency gravitational-wave sensitivity.