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Odyssey2 Mission: a Deep Space Gravity Explorer towards Neptune and Triton

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The Odyssey2 mission will be proposed for the next call of M3 missions for Cosmic Vision 2015-2025. It will perform accurate spacecraft navigation during its interplanetary cruise to Neptune and Triton for testing General Relativity in the deep space, in particular its scale dependence. At arrival, its instrumentation will be use for increasing our knowledge of the gravity and atmosphere of Neptune and Triton.

The instrumentation for fundamental physics objectives consists in
• A high-precision accelerometer, with bias-rejection system, measuring the deviation of the trajectory from the geodesics, that is also giving "drag" forces applied on the spacecraft;
• Radio-science instrument, for a precise range and Doppler measurement, with additional VLBI equipment;
• One-way laser ranging, which would allow one to improve the range and Doppler measurement.
• Ultra Stable Oscillator (USO), using for laser and radio-science measurement.

This instrumentation can also be used for planetary objectives on Neptune and Triton, for measuring a precise gravity field (radio-science + accelerometer) or the atmosphere (USO + accelerometer).Depending on the outputs of the Phase 0 performed by CNES, additional instrumentation could be carried in order to increase the scientific return on Neptune and Triton.