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The Transient High-Energy Sky and Early Universe Surveyor (THESEUS)

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The Transient High-Energy Sky and Early Universe Surveyor (THESEUS) is a mission conceptdeveloped by a large European collaboration under study by ESA since2018 and currently one of the three candidate M7 mission for a launch in mid '30s. THESEUS aims at fully exploiting Gamma-Ray Bursts for investigating the early Universe and as keyphenomena for multi-messenger astrophysics. By providing an unprecedented combination ofX-/gamma-ray monitors, on-board IR telescope and spacecraft autonomous fast slewing capabilities,THESEUS would be a wonderful machines for the detection, multi-wavelength characterization andredshift measurement of any kind of GRBs and many classes of X-ray transients, includinghigh-redshift GRBs for cosmology (pop-III stars, cosmic reionization, SFR and metallicityevolution up to the "cosmic dawn") and electromagnetic counterparts to sources of gravitationalwaves, especially short GRBs, possible soft X-ray emission and KN emission from NS-NS / NS-BHmergers. THESEUS would thus provide an ideal synergy with the very large astronomical facilitiesof the future working in the e.m. (e.g.,ELT, CTA, SKA, Athena) and multi-messenger (e.g., Einstein Telescope, Cosmic Explorer, km3NET).

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