

NASA's Gravitational-Wave Mission Concept Study

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With the conclusion of the NASA/ESA partnership on the Laser interferometer Space Antenna (LISA) Project, NASA initiated a study to explore mission concepts that will accomplish some or all of the LISA science objectives at lower cost. The Gravitational-Wave Mission Concept Study consists of a public Request for Information (RFI), a Core Team of NASA engineers and scientists, a Community Science Team, a Science Task Force, and an open workshop. The RFI yielded 12 mission concepts, 3 instrument concepts and 2 technologies. The responses ranged from concepts that eliminated the drag-free test mass of LISA to concepts that replace the test mass with an atom interferometer. The Core Team reviewed the noise budgets and sensitivity curves, the payload and spacecraft designs and requirements, orbits and trajectories and technical readiness and risk. The Science Task Force assessed the science performance. Three mission concepts have been studied by Team-X, JPL's concurrent design facility, to refine the conceptual design, evaluate key performance parameters, assess risk and estimate cost and schedule. The status of the Study are reported.