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Fundamental Physics in Space (H)
Study of Strong Gravity Using Gravitational and Electromagnetic Waves (H0.2)
Either poster or oral presentation (no preference).

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 consisted 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 were 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 by calculating the horizons, the detection rates and the accuracy of astrophysical parameter estimation for massive black hole mergers, stellar-mass compact objects inspiraling into central engines, and close compact binary systems. Three mission concepts have been studied by Team-X, JPL's concurrent design facility, to define a conceptual design, evaluate key performance parameters, assess risk and estimate cost and schedule. The Study results are summarized.