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The Promises and Challenges of LISA Science MICHELE VALLISNERI, Jet Propulsion Laboratory — The planned space-based observatory LISA will target gravitational waves of frequency between 0.1 mHz and 1 Hz. This band is populated by thousands of detectable astrophysical sources, which will enable many exciting investigations: exploring hierarchical galaxy formation scenarios, sampling the strong-field regime of general-relativistic dynamics, taking a census of Galactic compact binaries, characterizing the nature of the massive objects at galactic centers, and much more. In the last decade, the LISA community has achieved many proofs of principle that we will be able to extract the best possible science from the LISA data; in the remaining years before LISA is launched we must now work toward mature and robust analysis tools, making the best use of the experience of ground-based gravitational-wave astronomy, and of the advances in astronomical surveys and databases.

Michele Vallisneri
Jet Propulsion Laboratory

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