

Abstract Submitted  
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**Black Hole Astrophysics with eLISA** JOEY SHAPIRO KEY, University of Texas at Brownsville — Space based gravitational wave astronomy with the eLISA mission will probe massive black holes over a wide range of redshift and mass, across their evolutionary history. Coalescing massive binary black holes are among the loudest sources of gravitational waves in the Universe and are expected to appear in the early Universe when the first galaxies started to form. eLISA will be able to detect coalescing binary black holes at a redshift as high as  $z \sim 20$ , if they exist. eLISA will also observe Extreme Mass Ratio Inspirals (EMRIs), the inspiral and merger of stellar mass black holes into large, massive black holes at the centers of galaxies. A space based gravitational wave observatory will open a new window to understanding the astrophysics and role of massive black holes in our Universe.

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