**Massive Black Hole Binary Merger Rates in a Hierarchical Model of Structure Formation** EMILY ALICEA-MUÑOZ, Pennsylvania University, JOHN BAKER, JOAN CENTRELLA, NASA - Goddard Space Flight Center, PABLO LAGUNA, Pennsylvania State University, RICHARD MATZNER, UT Austin — With the future launch of LISA, it is important to predict massive black hole binary merger rates since these events at high-redshifts will account for a majority of the sources of low-frequency gravitational waves to be detected. We use the semi-analytical Press-Schechter formalism to calculate the abundance of dark matter halos of various masses, which harbor massive black holes at their centers, from redshifts $z = 20$ to $z = 0$. We adpot a $\Lambda$CDM cosmological model with an $n = 1$ power-law primordial power spectrum convolved with a smoothing filter function. Following the approach of Wyithe & Loeb (2003), we expect to calculate the black hole mass function at different redshifts. We also aim to improve on their expected merger rates and gravitational wave signatures by using the cosmological parameters determined by WMAP, thus expanding our understanding of how black holes assemble and grow.

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