

Abstract Submitted  
for the MAS20 Meeting of  
The American Physical Society

**Multiparameter tests of general relativity using multiband gravitational-wave observations**<sup>1</sup> ANURADHA GUPTA, University of Mississippi, SAYANTANI DATTA, Chennai Mathematical Institute, Siruseri, 603103, India, SHILPA KASTHA, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Callinstraße 38, D30167 Hannover, Germany, SSOHRAB BORHANIAN, Pennsylvania State University, K.G. ARUN, Chennai Mathematical Institute, Siruseri, 603103, India, B.S. SATHYAPRAKASH, Pennsylvania State University — In this talk we will demonstrate that multiband observations of stellar-mass binary black holes by the next generation of ground-based observatories (3G) and the space-based Laser Interferometer Space Antenna (LISA) would facilitate a comprehensive test of general relativity by simultaneously measuring all the post-Newtonian (PN) coefficients. Multiband observations would measure most of the known PN phasing coefficients to an accuracy below a few percent two orders-of-magnitude better than the best bounds achievable from even golden binaries in the 3G or LISA bands. Such multi-parameter bounds would play a pivotal role in constraining the parameter space of modified theories of gravity beyond general relativity

<sup>1</sup>PHY-1836779, AST-1716394, AST-1708146

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Date submitted: 02 Nov 2020

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