

Space Science Seminar
Tuesday, 2018 March 27
10:30 a.m.
NSSTC/2096

**Exploring Compact-Binary Astrophysics with
Multi-Messenger Astronomy**

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Host: Dr. Tyson Littenberg
(Sponsored by ST 12)

The most promising probe into compact-binary formation and evolution will be the populations observed by both gravitational wave (GW) and electromagnetic (EM) telescopes. As with any observation, biases must be characterized to gain a deeper understanding of the underlying physics governing the observed population. Investigation of these biases in population-synthesis studies requires a study of the variance in the observable population from a statistical sample of population realizations. In this talk, I will introduce a population-synthesis code, COSMIC, which provides a key necessity in understanding the compact-binary populations observable by current and future GW and EM observatories: the ability to generate a statistical sample of observable compact-binary populations using the same computational power as previous population synthesis methods. I will also show the results from two recent studies which used COSMIC to show LISA and Gaia together could characterize hundreds of accreting double-white dwarfs and Gaia could discover thousands of black holes by the end of its mission.

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