

Abstract Submitted
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Inferences on Populations of Binary Neutron Stars NAOMI GENDLER, Reed Coll, LARRY PRICE, VIVIEN RAYMOND, California Institute of Technology, LIGO TEAM — The aLIGO network stands to make hundreds of detections over the lifetime of the project. While there is much to be learned from the parameters of single events, the parameter distribution of the population of events is also of great interest for astrophysics, as this kind of parameter inference will help to develop gravitational-wave astronomy. The goal of this project is to develop the tools for estimating such population distributions and accounting for selection bias in such inferences. We will then apply the method to a simulated population of binary systems of neutron stars in order to estimate their mass distribution. We were able to create a technique that takes a set of data from aLIGO and runs it through a parameter estimation pipeline, taking into account selection bias effects. We start with a set of mass measurements, each measurement its own distribution due to noise in the detector. We draw these samples from a 2-dimensional distribution in chirp mass and symmetric mass ratio. We then use a Markov-Chain Monte Carlo method to estimate the parameters of the original distribution, as well as the rate of events.

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