

Abstract Submitted  
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**Effects of Eccentricity on Binary Black Hole Detection Rates by LIGO** URJA SHAH, IMRE BARTOS, University of Florida — Templated based gravitational wave searches used by AdLIGO and AdvIRGO currently do not include eccentric orbital templates. I am working to find a rate of binary black hole mergers for not highly and highly eccentricities that LIGO could detect in the O5 observational run. To do this, I am reviewing all the potential theoretical models of binary systems including the environment that they are originating from. Along with the information for the theoretical models, the details about the detectors and their detection capacity plays a big role in predicting a detection rate for mergers by LIGO in O5. Using information provided in LIGO reference papers, we are able to obtain important equations and constants used in the calculations. The technique used to perform the calculations includes finding the detection rates for the past O2 run since the reference papers constants corresponds of the O2 run. These were then upscaled to the O5 run by taking into consideration the potential time that LIGO will be running as well as the range of distance it will be observable. I am presenting the detection rate prediction calculated for one such binary black hole model for the O5 run.

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