

Abstract Submitted  
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**Modeling the Chi-square veto in the inspiral searches** RAHUL BISWAS, University of Texas at Brownsville, LIGO COLLABORATION — Chi-square discriminatory veto is a computationally expensive signal based veto as it requires lots of computing time. This veto is applied to the triggers surviving the second stage of the pipeline in the inspiral searches. We shall make an attempt to understand the nature of this veto and whether we can predict the chi-square values of triggers surviving this computationally expensive veto. This veto helps us to discriminate real signals from those arising due to noise transients by measuring the goodness of fit quantity. We discuss here two separate approaches. One is purely analytical which is based on the power accumulated in a given frequency bin due to the presence of non-stationary and non-Gaussian noise. We know that sum of squares of Gaussian random variables follow a central chi-square distribution whereas in case on non-Gaussian noise they obey a non-central chi-square distribution and hence the mean value has a contribution from central part non-central parameter  $\lambda$ . We shall show that this non-central parameter  $\lambda$  is a function of signal to noise ratio (SNR) of the triggers. Thus enabling us to model the expected chi-square values of the triggers using the SNR. The second approach I will talk involves trying to obtain a parabolic fit to the measured chi-squared distribution for a range of values as a function of signal to noise ratio.

Rahul Biswas  
University of Texas at Brownsville

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