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Properties and application of statistical methods to estimating compact binary merger rates. RAHUL BISWAS, PATRICK BRADY, JOLIEN CREIGHTON, University of Wisconsin, Milwaukee, STEPHEN FAIRHURST, Cardiff University, LIGO COLLABORATION — The use of the loudest observed event to generate statistical statements about rate and strength has become standard in searches for gravitational waves from compact binaries and pulsars. The Bayesian formulation of the method is generalized to allow for uncertainties both in the background estimate and in the properties of the population being constrained. The method is also extended to allow rate interval construction. Finally, it is shown how to combine the results from multiple experiments and a comparison is drawn between the upper limit obtained in a single search and the upper limit obtained by combining the results of two experiments each of half the original duration.

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