

Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Searching for Gravitational Wave Repeaters JOHN DWYER, ZSUZSA MARKA, LUCA MATONE, SUSIE BEDIKIAN, SZABOLCS MARKA, Columbia University — We describe a search method for finding gravitational waves and evaluate its performance on realistic simulated LIGO data. The method is designed to find locations in the sky that repeatedly emitted gravitational waves whose amplitude was close to the detector sensitivity limit. We build on information recorded by burst data reduction algorithms scanning the output of the LIGO detectors while imposing strict coincidence (e.g. time and frequency) criteria. Sky pointing is derived through the precise measurement of relative time delays of the candidate events between LIGO's two 4 km detectors using rank-correlation. The natural consequence of the two-detector LIGO network is that a ring-like probability distribution on the celestial sphere is provided for each candidate event. After collecting the candidate events for the observation period, the point by point significance for each location in the celestial sphere is calculated against the background to potentially reveal the presence of a gravitational wave repeater.

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Date submitted: 22 Mar 2007

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