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Stacking Gravitational Waves from SGR Bursts PETER KALMUS, Caltech, LIGO SCIENTIFIC COLLABORATION — Soft gamma-ray repeaters (SGRs) have unique properties that make them intriguing GW targets. Recently a LIGO search for transient GW from these sources placed upper limits on a set of almost 200 individual SGR bursts. These limits were within the theoretically predicted range of some models. We discuss a new search which builds upon the method used there. The new method aims to "stack" potential GW signals from multiple SGR bursts. We assume that variation in the time difference between the peak in electromagnetic emission and the peak in potential gravitational wave emission is small relative to the GW signal duration, and we time-align GW excess power time-frequency tilings containing individual burst triggers to their corresponding electromagnetic peaks. Using Monte Carlo simulations, we show that gains in GW energy sensitivity of $N^{1/2}$ are possible, where N is the number of stacked SGR bursts. We discuss application of the stacking search technique to the SGR 1900+14 storm, a dramatic multi-episodic bursting event which occurred during LIGO's fifth science run (S5).

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