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Beating the Crab pulsar spin-down and other upper limits: new results from the LIGO S5 known pulsar search MATTHEW PITKIN, University of Glasgow, THE LIGO SCIENTIFIC COLLABORATION — Using more than a year's worth of data from the fifth science run of the LIGO gravitational wave observatories we have set upper limits on the strength of gravitational wave emission from a selection of millisecond and young pulsars. The selected pulsars include many within binary systems and globular clusters, and also include the two pulsars with the highest known spin-down rates: the Crab pulsar and PSRJ0537-6910. For all these selected pulsars we provide either completely new upper limits or improvements on previously measured values. For the first time we are able to constrain the gravitational wave emission from the Crab pulsar to a value that is significantly lower than that based on simple energy conservation and spin-down arguments. We discuss how this important null result allows us to constrain the energetics of the Crab pulsar more tightly and make meaningful deductions about its equation of state.

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