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Broadband Search for Continuous-Wave Gravitation Radiation with LIGO VLADIMIR DERGACHEV, University of Michigan, LIGO-VIRGO COLLABORATION — Isolated rotating neutron stars are expected to emit gravitational radiation of nearly constant frequency and amplitude. Searches for such radiation with the LIGO interferometers are underway, using data taken from LIGO's fifth science run. Because the gravitational wave signal amplitudes are thought to be extremely weak, long time integrations must be carried out to detect a signal. This is complicated by the motion of the Earth (daily rotation and orbital motion) which induces substantial modulations of detected frequency and amplitude that are highly dependent on source location. Large amounts of acquired data make this computationally difficult. We present an algorithm called PowerFlux, used to account for these modulations, when summing power spectral density estimates incoherently over long time intervals. We will show results from the application of the PowerFlux detection pipeline to a broadband search in the initial data of the S5 run and discuss current approaches to carrying out a broadband (50-1500 Hz) search over 2 years of data.

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