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Broadband Search for Continuous-Wave Gravitation Radiation with LIGO VLADIMIR DERGACHEV, University of Michigan, LIGO SCIENTIFIC 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 collected over the past several years. 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. We present an algorithm called PowerFlux, used to account for these modulations, when summing power spectral density estimates incoherently over long time intervals. Current approaches to reconstruction of source parameters, coincidence analysis and outlier followup will also be discussed. We will show results from the application of the PowerFlux detection pipeline to a broadband search in the initial data of the S5 run.

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