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The population properties of gravitational waves in the transient catalog

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At present, LIGO and Virgo have confirmed the detection of gravitational waves from eleven compact binary mergers. New candidate events are announced on a weekly basis. As the catalog of gravitational-wave transients grows, it is increasingly interesting to analyse the population properties of merging compact binaries. In this talk, I highlight how the mass, spin, and eccentricity of compact binaries can be gleaned from gravitational-wave observations in order to understand a variety of phenomena, from the formation mechanism of binary black holes, to the fate of massive stars. I present recent results characterising the eccentricity of binary black holes in the first gravitational-wave transient catalog, and discuss the implications for binary black hole formation.

Primary author: THRANE, Eric (Monash University)