ID de Contribution: **26** Type: **Contributed talk**

The effect of the choice of prior on measurements of binary black hole spins

mercredi 31 mai 2017 09:35 (15 minutes)

The distribution of the component spins of binary black holes is one of the most astrophysically interesting results that could be produced by gravitational-wave detectors in the coming years. Unfortunately, the component spins are also one of the most difficult parameters to infer from gravitational waves. Better measurements are obtained of the "effective spin"and "effective precession" parameters, which are mass-weighted combinations of the spin components parallel and perpendicular to the orbital angular momentum, respectively. Even these parameters are not well constrained at the signal-to-noise ratios of current detections, and are subject to the choice of prior. Current published results on detected events use a prior for each spin that is uniform in magnitude and isotropic in orientation. While astrophysically plausible, this prior couples the effective spin and effective precession parameters, making it difficult to produce independent estimates of each. I demonstrate the effect the choice of prior can have on spin measurements of simulated GW151226-like events by comparing posterior distributions from three different priors: uniform in magnitude and isotropic in orientation, cubic in magnitude and isotropic in orientation ("volumetric"), and a new prior that is uniform in effective spin and effective precession, which decouples these two parameters.

Auteur principal: Dr CAPANO, Collin (Albert Einstein Institute)

Orateur: Dr CAPANO, Collin (Albert Einstein Institute)

Classification de Session: Binary Black Hole Science