Parameter estimation and uncertainty for gravitational waves from binary black holes CHRISTOPHER BERRY, University of Birmingham, LIGO SCIENTIFIC COLLABORATION, VIRGO COLLABORATION — Binary black holes are one of the most promising sources of gravitational waves that could be observed by Advanced LIGO. To accurately infer the parameters of an astrophysical signal, it is necessary to have a reliable model of the gravitational waveform. Uncertainty in the waveform leads to uncertainty in the measured parameters. For loud signals, this theoretical uncertainty could dominate statistical uncertainty, to be the primary source of error in gravitational-wave astronomy. However, we expect the first candidate events will be closer to the detection threshold. We look at how parameter estimation would be influenced by the use of different waveform models for a binary black-hole signal near detection threshold, and how this can be folded in to a Bayesian analysis.

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