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**Compact binary coalescences: The subtle issue of angular momentum**<sup>1</sup> NEEV KHERA, ABHAY ASHTEKAR, TOMMASO DE LORENZO, Pennsylvania State University — In presence of gravitational radiation, the notion of angular momentum of an isolated system acquires an infinite dimensional supertranslation ambiguity. This fact has been emphasized in the mathematical general relativity literature over several decades. We analyze the issue in the restricted context of compact binary coalescence (CBC) where the initial total angular momentum of the binary and the final black hole spin generically refer to *distinct* rotation subgroups of the Bondi-Metzner-Sachs group, related by *supertranslations*. We show that this ambiguity can be quantified using gravitational memory and the ‘black hole kick’. This goal of this talk is to show that, although the ambiguity is conceptually important, under assumptions normally made in the CBC literature, it can be ignored in practice for the current and foreseeable gravitational wave detectors.

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