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Applying Late-Merger IRS Multi-Mode Templates to Parameter Estimation BERNARD KELLY, University of Maryland, Baltimore County & NASA GSFC, JOHN BAKER, NASA GSFC — The IRS picture [Baker et al. PRD 78:044046 (2008); Kelly et al. 84:084009 (2011)] visualises black-hole-binary late-inspiral/merger/ringdown gravitational waveforms as being generated by a single "implicit rotating source," with the most important waveform angular modes being locked in phase through merger into ringdown. This led to the development of late-merger/ringdown waveform templates for the dominant modes of the binary for nonspinning black holes, and for holes with aligned (non-precessing) spins. We report on the current status of the original IRS model as used in multi-mode templates. We consider its performance for the most important $|m| = \ell$ modes. We also consider the inconvenient behavior of $|m| < \ell$ waveform modes, focusing on their physicality, how they may be treated in the IRS picture, and implications for other approaches to constructing template banks that reach beyond the dominant quadrupole radiation for black-hole binary mergers.

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