

PANEL DISCUSSION:
GRAVITATIONAL WAVES AND
NEUTRON STAR EQUATION
OF STATE

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QUESTIONS FOR DISCUSSION

- numerical relativity simulations
- analytical waveforms
- analysis methods

NUMERICAL RELATIVITY SIMULATIONS

- what physical effects are still lacking?
 - neutrino transport, magnetic fields, hyperons/quark-gluon plasma
- how do simulations from different groups compare?
- how well do simulations cover the parameter space?
 - component masses, mass ratio, spins,
- simulations of neutron star-black hole mergers
 - parameter space coverage (as above)
 - up to what mass ratios are matter effects relevant
 - for GW modeling, for EM observation
 - simulations of $\sim 1:1$ neutron star-black hole mergers

ANALYTICAL MODELING

- are waveform models good enough for unbiased estimation of NS EoS?
 - waveform models based on independent NR simulations
 - comparison of analytical models across the parameter space
- physics that is lacking in modeling
 - spins, magnetic fields, equations of state
- post-merger models
 - spectra, time-domain models
- inspiral-post merger unified models
 - what, if anything, do we gain by IPM models?

MISCELLANEOUS

- detector calibration effects
- sensitivity to assumption of prior probabilities

ANALYSIS METHODS

- are our analysis methods mature?
 - what further improvements are needed in inference techniques?
- prior probability distribution of parameters
 - what priors are appropriate for: masses, spins, and magnetic fields
- can we continue to assume the same EoS for both companions?
 - phase transition, distinguishing NS-BH vs NS-NS
- does EoS parametrization work for all SNRs and for EoS?
 - do we need to work with specific EoS for very loud signals or when combining a large number of events?