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Multi-messenger studies involving Gravitational Waves

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Recently, with the first discovery of gravitational waves, the multi-messenger studies involving observations on the same astrophysical event with photons, neutrinos and gravitational waves really began in full.

One proposed approach is to follow electromagnetic observations of potential candidate sources for merging (like for instance of TXS 0506+056) and to model their gravitational wave emission and make predictions regarding the possible merging time or observational potential for present and future gravitational wave observatories. Using known observed parameters of potential candidate sources, such as masses, redshift, orbital separation, coordinates etc. and modelling the ones that are not yet observed, like spin or orbital separation we also simulated the potential waveform of the gravitational waves emitted in the interaction of the binary system and analyzed the waveform changes when certain parameters are modified, as well as the feasibility of actually detecting its merging phase. These studies can lead to limits on the potential detection of the future gravitational wave observatories or actual predictions for the present ones.

Poster Abstract

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