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Core-collapse supernova gravitational-wave physical inference in low-latency

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Core-collapse supernovae (CCSNe) are exploding massive stars and the next Galactic event will be one of the most interesting astronomical events of the century. With the advent of the three-dimensional CCSN simulations, the number of methods to infer physical information from a gravitational wave (GW) discovery grew significantly. For example, the proto-neutron star evolution and deciphering equation of state through High-Frequency Feature, or understanding the shock oscillations by the presence of the Standing Accretion Shock Instability. We present a comprehensive effort at the University of Warsaw to develop and optimize physical inference methods for low-latency operation. We use a model-independent coherent WaveBurst and the latest multidimensional CCSN waveforms.

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