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CCSNe detection perspectives with Einstein Telescope

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Core collapse supernovae are the most energetic explosions in the modern
Universe and, because of their properties, they are considered a potential source of detectable gravitational waveforms for long time. The main obstacles to their detection are the weakness of the signal and its complexity, which cannot be modelled, making almost impossible applying matched filter techniques as the ones used for detecting compact binary coalescences. While the first obstacle will be probably overcame by next generation gravitational wave detectors, the second one can be faced by adopting machine learning techniques. In this contribution, a novel method based on a classification procedure of the time-frequency images using a convolutional neural network will be described, showing the CCSN detection capability of the next generation graitational wave detectors, with a focus on Einstein Telescope.

Primary author: VEUTRO, Alessandro (Istituto Nazionale di Fisica Nucleare)

Co-authors: RICCI, Fulvio (Istituto Nazionale di Fisica Nucleare); DI PALMA, Irene (Istituto Nazionale di Fisica Nucleare); DRAGO, Marco (Istituto Nazionale di Fisica Nucleare); LÓPEZ, Melissa (Institute for Gravitational and Subatomic Physics (GRASP), Department of Physics, Utrecht University, Princetonplein 1, 3584 CC Utrecht, The Netherlands & Nikhef, Science Park 105, 1098 XG Amsterdam, The Netherlands); CERDÁ-DURÁN, Pablo (Departamento de Astronomía y Astrofísica, Universitat de València)

Presenter: VEUTRO, Alessandro (Istituto Nazionale di Fisica Nucleare)

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