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The Gravitational wave experiments and the multimessenger astronomy

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The gravitational wave network of interferometers on Earth has completed three successful observing runs, detecting nearly a hundred events. Almost all detected gravitational wave signals are from the coalescence of compact binaries composed of black holes (BH/BH). A few others have been associated with the coalescence of neutron star/neutron star or mixed black hole/neutron star pairs. The fourth observing run started in May 2023, and until January 2024, only the two LIGO detectors were in observing mode, yielding 81 new high-confidence gravitational wave candidates. The detection rate has steadily increased since the LIGO and Virgo interferometers resumed observations after March 2024. Currently, data collection is still ongoing, leading to new discoveries. This talk will summarize the main observational results and their potential impact on multimessenger astronomy.

Primary author: RICCI, Fulvio (Istituto Nazionale di Fisica Nucleare)

Presenter: RICCI, Fulvio (Istituto Nazionale di Fisica Nucleare)

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