

# Improving Gravity Spy's Classification Accuracy of Real Gravitational Wave Events and Excess Noise Artifacts

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A key issue in the search for Gravitational Waves (GWs) by the Advanced Laser Interferometer Gravitational Wave Observatory (LIGO) and Advanced Virgo detectors surrounds the presence of excess noise transients (glitches) that pollute the detector data. These glitches come from a range of sources and can often mimic the form of real astrophysical events. To distinguish between real events and glitches efficiently and accurately, we turn to Gravity Spy, a machine learning program utilising citizen science effort. However, Gravity Spy has its limitations in terms of classification accuracy. Specifically, it has trouble classifying signals that come from black hole mergers on the very high and low mass range of the spectrum. We present our work to improve Gravity Spy and how its performance has progressed. This work hopes to ensure a safe and rapid method of event classification for the expected high candidate event rate of the next observing run.

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