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The background rate of false positives: Combining simulations of gravitational wave events with an unsupervised algorithm for transient identification in crowded image-subtracted data. KENDALL ACKLEY, STEPHEN EIKENBERRY, SERGEY KLIMENKO, Univ of Florida - Gainesville, LIGO COLLABORATION — We are now entering the era of multimessenger gravitational wave (GW) astronomy with the completion of the first observing run of Advanced LIGO. Multiwavelength electromagnetic (EM) emission is expected to accompany gravitational radiation from compact object binary mergers, such as those between neutron stars and stellar-mass black holes, where Advanced LIGO is most sensitive to their detection. Attempting to perform EM follow-up over the 10-100s deg^2 error regions will be faced with many challenges, including the identification and removal of $\mathcal{O}(\infty\prime^{\triangledown})$ false positive transients that appear as a commotion of background events and as image artifacts in crowded image-subtracted fields. We present an update to our automated unsupervised algorithm including how our pipeline uses the existing coherent WaveBurst pipeline in an attempt to develop optimized EM follow-up schema. Our end-to-end pipeline combines simulated GW events with actual observational data from a number of ground-based optical observatories, including PTF, ROTSE, and DECam. Our performance is reported both in terms of the number of coincident false positives as well as the efficiency of recovery.

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