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Detecting binarity of GW150914-like lenses in gravitational microlensing events[1] MICHAEL KESDEN, DANIEL EILBOTT, ALEXANDER RILEY, JONATHAN COHN, LINDSAY KING, University of Texas at Dallas — The recent discovery of gravitational waves from stellar-mass binary black holes (BBHs) provided direct evidence of the existence of these systems. These BBHs would have gravitational microlensing signatures that are, due to their large masses and small separations, distinct from single-lens signals. We apply Bayesian statistics to examine the distinguishability of BBH microlensing events from single-lens events under ideal observing conditions, using modern photometric and astrometric capabilities. Given one year of ideal observations, a source star at the Galactic center, a GW150914-like BBH lens (total mass 65 solar masses, mass ratio 0.8) at half that distance, and an impact parameter of 0.4 Einstein radii, we find that BBHs with separations down to 0.00634 Einstein radii are detectable, marginally below the separation at which such systems would merge due to gravitational radiation with the age of the Universe.

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