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Measuring Accretion Impact Radii With Optical and Gravitational Wave Observations of Compact Binaries ERIC ADDISON, KATIE BREVIK, SHANE L. LARSON, Utah State University — One of the primary astrophysical sources for space-based gravitational wave observatories will be ultra-compact binary star systems in the Milky Way. Millions of these systems exist in the galaxy, and it is estimated that thousands will be observable to space-based gravitational wave observatories. Many ultra-compact binaries will be simultaneously observable in the electromagnetic and gravitational waves, opening the door for a synthesis of independent data sources known generically as *Multi-Messenger Astronomy*. By considering both electromagnetic and gravitational wave data, we have developed a technique which can be used to estimate the radius of the accretion disc; a feat currently possible only for a few eclipsing systems. This method does not require that the observed system be eclipsing, allowing accretion disc radii to be measured for many more systems.

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