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No such thing as a circular orbit[1] NICOLAS YUNES, NICHOLAS LOUTREL, SAMUEL LIEBERSBACH, NEIL CORNISH, Montana State University — The loss of orbital energy and angular momentum to gravitational waves produced in a binary inspiral forces the orbital eccentricity to evolve. The general belief has been that the eccentricity decreases monotonically in the inspiral and completely circularizes the binary. Contrary to this, in this talk I will show that, once the eccentricity is small enough, orbit averaging breaks down and radiation reaction forces the eccentricity to grow secularly before the binary reaches the last stable orbit and merges. Even if the eccentricity is initially exactly zero, non-linear effects in the late inspiral force the eccentricity to grow secularly, thus rendering the concept of a quasicircular obit void. I will conclude with a short discussion of the implications that such eccentricity growth has on gravitational wave observations and parameter estimation.

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