Eclipse Timing of AM CVn Binary Stars

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An AM CVn-type binary system consists of a white dwarf accreting hydrogen-depleted material from a low-mass, degenerate or semi-degenerate donor star. The secular orbital period evolution of AM CVn binaries is driven by gravitational wave radiation, and they are expected to be among the brightest Galactic sources detectable to space-based graviational wave detectors. The period evolution is predicted to be detectable on a timescale of years. Two eclipsing AM CVn-type binaries, YZ LMi and Gaia14aae, have been observed frequently since 2006 and 2015, respectively. I will present a search for an orbital period derivative among the observed eclipses, and show that for YZ LMi the non-detection of the predicted period derivative is significant at the three sigma level. I will discuss potential reasons for this discrepency.