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Correcting binary pulsar merger rates for spin evolution and orientation[1] RICHARD O'SHAUGHNESSY, Pennsylvania State University, CHUNGLEE KIM[2], Lund Observatory, Lund University — State-of-the-art empirical estimates for gravitational wave merger rates of pulsar binaries depend linearly on the fraction of sky the observed pulsar's beam covers, a quantity that has only rarely been precisely measured. The opening angle of pulsars has long been known to evolve with the spin period, decreasing both at very short and very long periods. Pulsars may align with their spin axis on long timescales as well as spin down (and therefore change opening angle). Both effects must be included in any estimate of the beaming fraction of a pulsar with unknown beaming geometry. Unfortunately, when merger rates for binary compact objects were last estimated, the beaming angle for most pulsars was estimated by the value of the beaming fraction for just two canonical binary pulsars. In this paper we revisit the observed binary pulsars, particularly white dwarf-neutron star pulsars, to examine the sensitivity of merger rate predictions to different assumptions regarding opening angle and alignment.

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