

Spin and Alignment Evolution of the Double Pulsar

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The spin of the short period pulsar in PSR J07370 A & B evolves in isolation, under the influence of its own electromagnetic torques. Not so PSR J07370B. The wind from A buffets and confines the slowly rotating neutron star's magnetosphere, resulting in a spindown torque which, at the current epoch, depends on the rotational energy loss of pulsar A (M. Lyutikov, 2004, MNRAS, 353, 1095; J. Arons *et al.* 2005, in 'Binary Radio Pulsars', F. Rasio and I Stairs, eds. (San Francisco:ASP), 95). There is also a torque which acts to align the angular momentum of B with the orbital angular momentum of the binary. I describe the evolutionary history of the spins, including the early history of B when B's own EM torques exceeded the external torque, and also discuss the constraints put on the interaction physics by eclipse models which require B's angular momentum to be strongly tipped with respect to the orbital angular momentum (M. Lyutikov and C. Thompson, 2005, ApJ, 634, 1223). We also discuss the (small) effect the interaction of A's wind with B has on the orbital evolution of the binary.