

EVOLUTIONARY STATUS OF RE J0317-853

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RE J 0317-853 is an isolated magnetic white dwarf which is hot, highly magnetized and rapidly rotating relative to the rest of the magnetic white dwarf population. Due to the age discrepancy estimated by its hot nature and the colder counterpart LB 9802, RE J 0317-853 was assumed to be a result of a binary merger. In this work we present the parallax measurements made by Hubble Space Telescope's Fine Guidance System and the spectro-polarimetry from Anglo-Australian Observatory to reassess the evolutionary history of RE J 0317-853. Through the parallax measurement we determine the radius, mass and furthermore with the use of evolutionary models from the literature we estimate the cooling age. Additionally we modeled the phase resolved flux and polarization spectrum of RE J 0317-853 and our magnetic models are able to account for the formerly unexplained $\sim 16\%$ circular polarization feature. We also discuss the effect of different possibility of core composition and the effect of uncertainty in the temperature. The precise evolutionary history of RE J 0317-853 depends on the knowledge of the effective temperature. A single star progenitor is possible if we assume that the effective temperature is at the cooler end of the possible range from 30 000 to 50 000 K; if T_{eff} is rather at the hotter end, a binary merger scenario for RE J 0317-853 becomes more plausible.