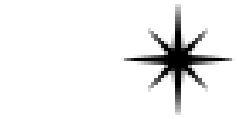


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# Investigating the magnetic field evolution and electron capture processes in a magnetized White Dwarf

White dwarf(WD) are compact stars with electron degenrate pressure resisting against gravitational collapse. Using Zeeman splitting of optical spectra, polarization measurements, or optical rotation spectrophotometry, the magnetic field(MF) strengths of WDs can be observed directly. At present, the observed magnetic field intensity at the surface of a strongly magnetized WD is about 10^{9}-10^{12} G, and its core's MF strength may exceed the quantum critical magnetic field of electrons. In this paper, by considering a strongly magnetized WD model with variable MFs, we investigate the MF decay and electron capture(EC) processes in the interior of the WS and calculate the release rate of MF energy and neutrino production rate in these two processes. This study will be useful for the study of internal thermal evolution, surface thermal radiation and internal stability of magnetized WDs in the future.

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