

THE CLASS OF MAGNETIC HELIUM-SDOs: PROGENITORS TO STRONGLY MAGNETIC DA(O)s

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Magnetic fields play an important role throughout stellar evolution, and among white dwarfs, the end stage of 95% of all stars, the fraction of strongly magnetic systems is larger than about 20%. The origins of magnetic white dwarfs are still under discussion, but it is likely that a significant fraction of them are formed by stellar mergers.

Several types of merger remnants are thought to ignite helium fusion, such as the merger of a helium-WD with a second He-WD, a He/C/O hybrid WD, or a low-mass main sequence star, thus forming a hot subdwarf star. In particular, most of the hot and helium-rich He-sdO stars are thought to be formed by mergers. However, out of hundreds of hot subdwarfs studied over several decades, none showed detectable magnetic fields. This changed recently, when four almost identical magnetic He-sdO stars were discovered, with mean field strengths between 300 and 500kG. Why are these stars magnetic while vast majority of other He-sdOs are non-magnetic? This question is still open. What is fairly certain is that the four magnetic He-sdOs will evolve to become strongly magnetic DA(O) WDs.