

WD 1856 B: A CLOSE GIANT PLANET AROUND A WHITE DWARF  
THAT COULD HAVE SURVIVED A COMMON-ENVELOPE PHASE

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The discovery of a giant planet candidate orbiting the white dwarf WD 1856+534 with an orbital period of 1.4 d poses the questions of how the planet reached its current position. We here reconstruct the evolutionary history of the system assuming common envelope evolution as the main mechanism that brought the planet to its current position. We find that common envelope evolution can explain the present configuration if it was initiated when the host star was on the AGB, the separation of the planet at the onset of mass transfer was in the range 1.69–2.35 au, and if in addition to the orbital energy of the surviving planet either recombination energy stored in the envelope or another source of additional energy contributed to expelling the envelope. We also discuss the evolution of the planet prior to and following common envelope evolution. Finally, we find that if the system formed through common envelope evolution, its total age is in agreement with its membership to the Galactic thin disc. We therefore conclude that common envelope evolution is at least as likely as alternative formation scenarios previously suggested such as planet-planet scattering or Kozai-Lidov oscillations.