A Status Report on a Planet Search Around White Dwarf Stars

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We have continued monitoring a pilot sample of 15 pulsating DA white dwarfs for center-of-mass motion caused by a planetary companion. Roughly seven years into our survey, we have evidence for possible periodic variations in pulse arrival times for at least two white dwarfs in our sample. The variations in these systems are unlikely to be caused by secular evolution and are most likely the result of motion of the white dwarf around a center of mass. Still, we have yet to claim confirmation of a planet. GD66 is a previously published candidate system, with a modulation in pulse arrival times that remains consistent with a $< 3\,M_{\rm J}$ sin i planetary companion with a > 6 year orbital period. Another candidate system, WD1354+0108, has a phase modulation consistent to that which would be caused by a $0.7\,M_{\rm J}$ sin i planet at 2.3 AU (a 4.5 year orbit). We see the same behavior in two independent frequencies within this star, and while a sinusoid is currently a 3 times better fit to the data than a straight line (as we might expect from cooling alone in a DAV), we remain cautious with regards to the statistical significance of our findings. Observations of these candidate systems are ongoing in order to constrain any planetary companions that may be present.