Peeking in the Stellar Graveyard for Planets and Dust

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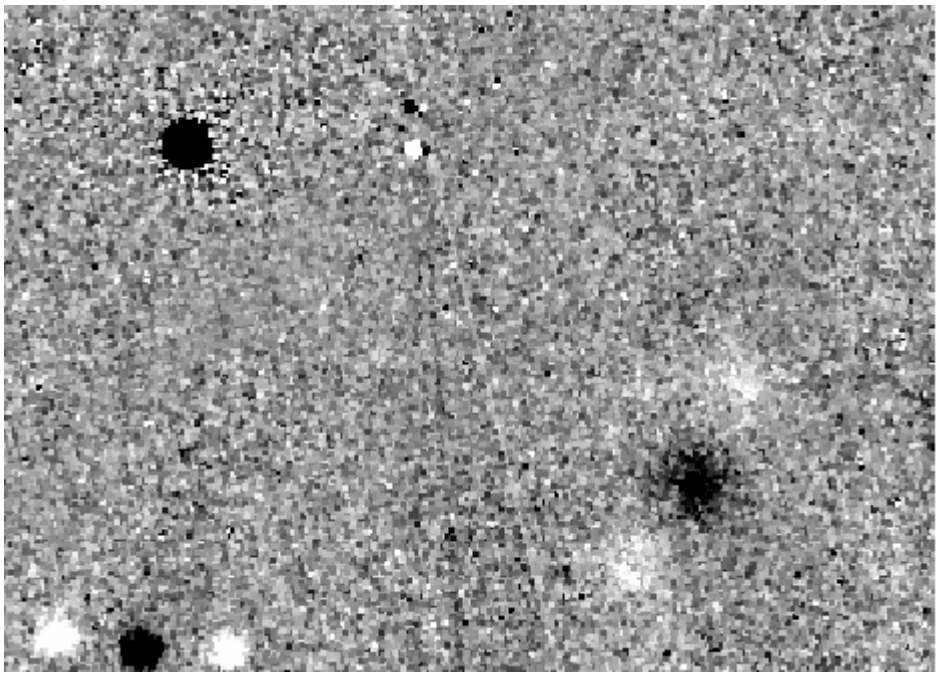
We present the latest results of a multi-wavelength study of nearby hydrogen white dwarfs with photspheric metal lines (DAZs) using near infrared high contrast imaging and Spitzer data. We are searching for signs of excesses due to dust or unresolved companions in the mid-infrared while complementing such observations with high contrast imaging that can be sensitive to resolved massive extrasolar planets. Figure 1 shows the white dwarf G 74-7 in a high contrast image from the Hubble Space Telescope. Planets > 10 M_{Jup} would have been detected. Our preliminary Spitzer results place strict limits on the presence of brown dwarfs down to the Roche limit of the white dwarf, while our near IR imaging limits the presence of well separated companions out to ~50-100 AU. As the rest of our data is taken we can make a definitive test of the origin of DAZs and whether they are caused by unseen companions, ISM accretion, or due to planetary sytems. Future observations should place strict limits on the number of planets around



these objects, which will in turn determine the impact of varying stellar mass on the efficiency of planet formation.

Figure 1: Hubble Space Telescope NICMOS image of G 74-7 (black circle in the upper left) and its surroundings. A background star and galaxy are at the bottom of the image. Planets > 10 M_{Jup} could have been detected close to the white dwarf.