The stratification of metals in hot white dwarf atmospheres

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Hot white dwarf atmospheres are brimming with metallic elements. While radiative levitation theory predicts which elements will be present, and the theoretical patterns between abundance and temperature are broadly consistent, the quantitative abundance measurements of a given white dwarf do not always reproduce theoretical estimates particularly well, and in some cases the absorption line profiles cannot be reproduced. There is also sometimes a significant difference in elemental abundances between systems of a similar effective temperature and surface gravity. It can therefore be inferred that the local stellar environment or stellar processes play a significant role in the observed metallicity of such white dwarfs. While some white dwarfs have unambiguous signs of external sources of pollution, such as a planetary nebula, circumstellar disks, local ionised ISM or are in binary systems, other white dwarfs show no obvious sign of external sources for their observed metal content. One such system, REJ 1032+532, has previously been found to have its nitrogen only in the upper slab of its atmosphere, explaining the observed line profiles. Here, REJ 1032+532 is re-examined using more up to date versions of modeling software, and without using the simplifying assumptions used in previous work. Results of stratified atmosphere calculations for other hot white dwarfs, including the high effective temperature (110,000K) PG0948+534 are also presented.