

APPLYING THE ACCRETION-DIFFUSION MODEL TO A SAMPLE OF DAZ WITHOUT IR EXCESS

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We consider a sample of five stars with effective temperatures lower than 25,000 K and showing a range of metallicities. Two stars exhibit a host of metal lines from multiple species and three stars show uniquely faint silicon lines. The most likely origin of metals detected in stars of this type is the accretion of matter from circumstellar material, although none of the objects considered in this study bears the signature of a dust disk frequently detected through IR excess in DAZ. The aim of this paper is to explain the peculiar abundance patterns observed in these stars in terms of the accretion-diffusion model and infer the source of the circumstellar matter. To achieve this, we perform time-dependent diffusion calculations accounting for radiative levitation, which is not entirely negligible for some of the light species (C, Si, and Al).