

Scandium Abundance in Metal-poor Stars

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Abstract. The Scandium abundances for 85 metal-poor stars are presented. Our result shows that NLTE corrections for Sc II lines are small (-0.04 to $+0.06$ dex). The abundance trends in stars of different populations are discussed.

Keywords. stars: abundances, stars: late type, Galaxy: evolution

Scandium is an element intermediate between α elements and iron-peak elements in the periodic table. Its abundance pattern in long-lived F- and G-type stars with different metallicity is not only important for the chemical evolution of the Galaxy, but also for element nucleosynthesis theory.

We present scandium abundances for 85 metal-poor stars applying full spectrum synthesis based on level populations calculated from the statistical equilibrium equations (Zhang *et al.* 2008).

The scandium abundances of different populations show distinct trends. $[\text{Sc}/\text{Fe}]$ gradually increases with a decrease of $[\text{Fe}/\text{H}]$ over the range of $-0.8 < [\text{Fe}/\text{H}] < 0.0$ for thin disk stars, $[\text{Sc}/\text{Fe}]$ of thick disk stars is nearly constant over the range of $-1.0 < [\text{Fe}/\text{H}] < -0.4$, halo stars also have nearly constant values of $[\text{Sc}/\text{Fe}] \sim +0.10$ dex.

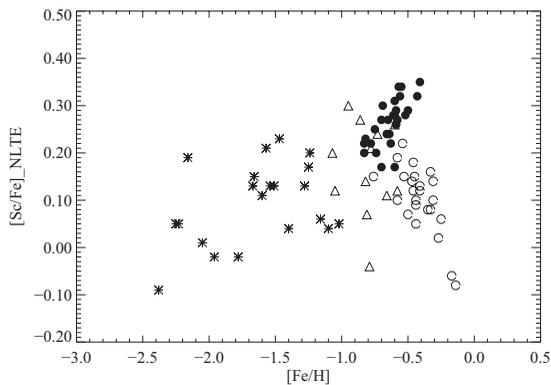


Figure 1. Abundance ratios $[\text{Sc}/\text{Fe}]$ for NLTE analysis. Open circles refer to the thin-disk stars, filled circles to the thick-disk stars, asterisks to the halo stars, open triangle to the stars with uncertain population membership.

Reference

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