Oxygen Abundance and Convection
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Abstract. The triplet IR lines of O I near 777 nm are computed with the Kurucz’s code, modified to accept several convection models. The program has been run with the MLT algorithm, with $l/H = 1.25$ and 0.5, and with the Canuto-Mazzitelli and Canuto-Goldman-Mazzitelli approaches, on a metal-poor turnoff-star model atmosphere with $T_{\text{eff}} = 6200$ K, log $g = 4.3$, [Fe/H]= −1.5. The results show that the differences in equivalent widths for the 4 cases do not exceed 2 per cent (0.3 mA). The convection treatment is therefore not an issue for the oxygen abundance derived from the permitted lines.

Population III Supernovae and their Nucleosynthesis

Abstract. Stars more massive than $\sim 20 - 25 M_\odot$ form a black hole at the end of their evolution. Stars with non-rotating black holes are likely to collapse “quietly” ejecting a small amount of heavy elements (Faint supernovae). In contrast, stars with rotating black holes are likely to give rise to very energetic supernovae (Hypernovae). We present distinct nucleosynthesis features of these two types of “black-hole-forming” supernovae. Nucleosynthesis in Hypernovae is characterized by larger abundance ratios (Zn,Co,V,Ti)/Fe and smaller (Mn,Cr)/Fe than normal supernovae, which can explain the observed trend of these ratios in extremely metal-poor stars. Nucleosynthesis in Faint supernovae is characterized by a large amount of fall-back. We show that the abundance pattern of the recently discovered most Fe-poor star, HE0107-5240, and other extremely metal-poor carbon-rich stars are in good accord with those of black-hole-forming supernovae, but not pair-instability supernovae. This suggests that black-hole-forming supernovae made important contributions to the early Galactic (and cosmic) chemical evolution. Finally we discuss the nature of First (Pop III) Stars.

The Role of AGB Stars
John Lattanzio, Amanda Karakas, Simon Campbell, Lisa Elliott, & Alessandro Chieffi

Abstract. We give a brief summary of the abundance anomalies seen in globular cluster stars, and try to review how and if AGB stars could be responsible. The abundance anomalies are clearly indicative of hot H burning, such as is expected during hot bottom burning in intermediate mass AGB stars. Nevertheless, we conclude that a quantitative fit is very hard to obtain using current AGB models.