Red Giant Branch Stars in Fornax with VLT/FLAMES

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Abstract. The Fornax dSph is an interesting case as it contains five old globular clusters and its field stars, although predominantly of intermediate (3-8 Gyr old) age, cover a wide range of age and metallicity. Detailed abundance analysis is crucial to our understanding of the earliest star formation epochs, where classic CMD analysis fails to provide a unique answer. It also allows us to measure the chemical evolution of the stellar population following tracers of different enrichment mechanisms through time, e.g. SN type II (alpha elements); AGB stars (s-process elements) etc. With our large sample of abundance measurements we will obtain a detailed picture of the evolution of Fornax and of the role played by small galaxies in the building up of larger ones.

Keywords. Stars: abundances, galaxies: abundances, galaxies: evolution, galaxies: individual (Fornax)
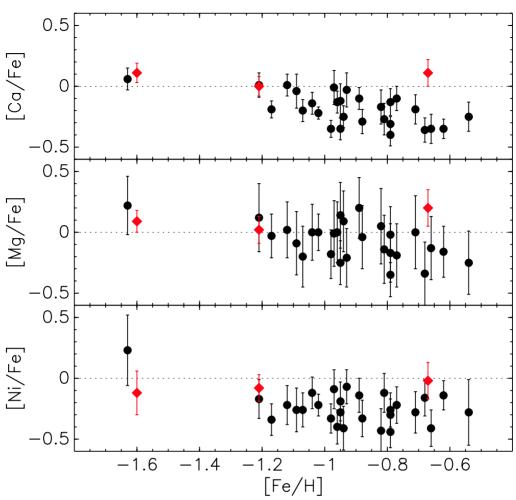

In Figure 1, we present preliminary abundance ratios [Ca/Fe], [Mg/Fe] and [Ni/Fe] as a function of their [Fe/H], for a sample of 30 stars. It can be seen that the Fornax field star population is relatively metal rich, quite a contrast with the population from the extremely metal poor globular clusters we have studied (Letarte *et al.* 2005, soon to be submitted), where we find an average [Fe/H] = −2.5, −2.1 and −2.4 for cluster 1, 2 and 3. How these two populations can be reconciled with each other in this small dwarf galaxy is the subject of future work. The 3 points in red (diamonds) are from Shetrone *et al.* 2003 and Tolstoy *et al.* 2003 (derived from UVES spectra). This is just 30% of our sample, more than 70 additional stars will soon be processed in the same way, and we have observed spectral lines for 17 elements, namely: Ba, Ca, Co, Cr, Eu, Fe, La, Mg, Mn, Na, Nd, Ni, O, Sc, Si, Ti and Y. In our final analysis, we will use the recently released MARCS stellar model-atmosphere (http://marcs.astro.uu.se/).

References

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Figure 1. Abundance ratios for a sample of Fornax Field stars. Red (diamonds) are UVES derived abundances taken from Shetrone *et al.* 2003 and Tolstoy *et al.* 2003.