

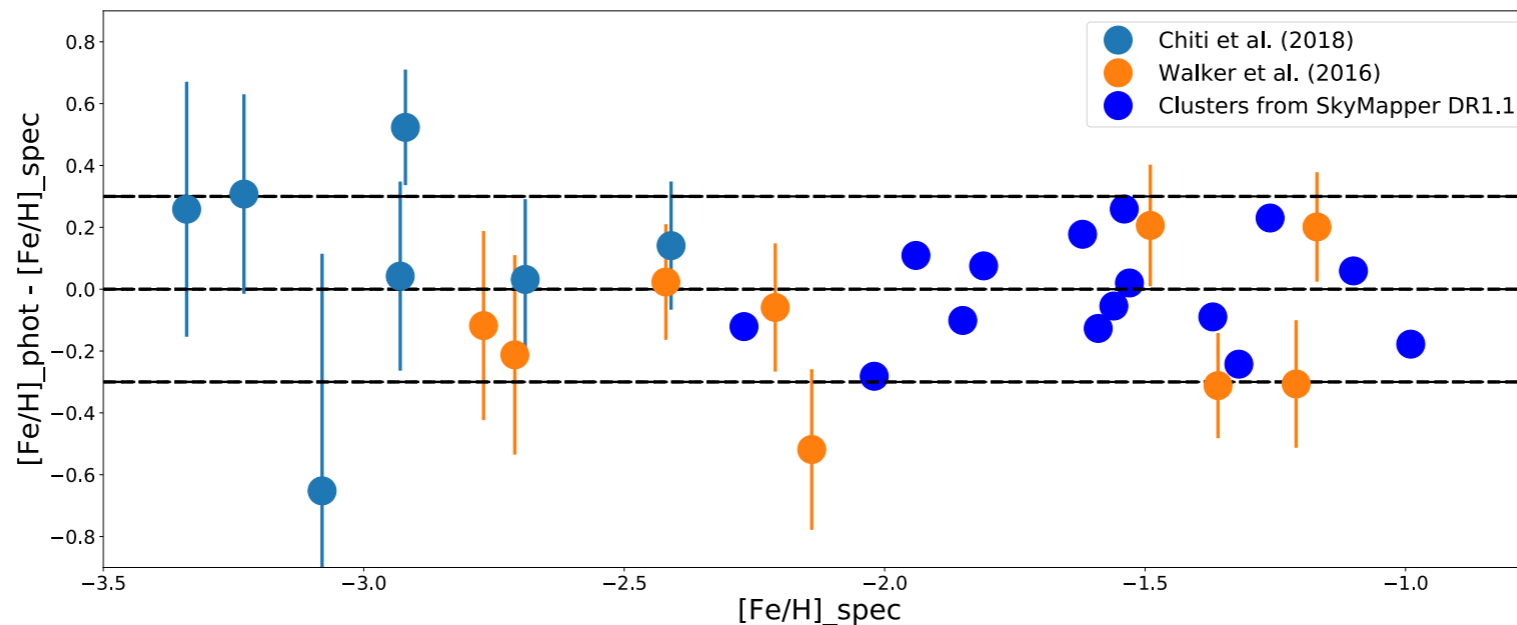
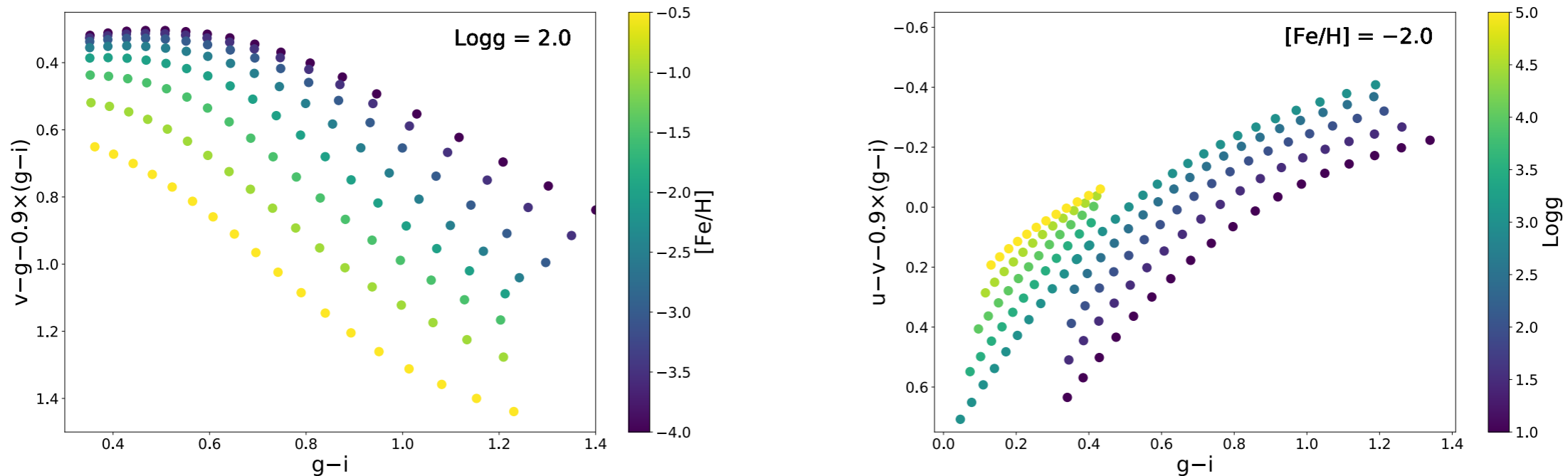
Chemical characterization of ultra-faint dwarf galaxies using SkyMapper photometry

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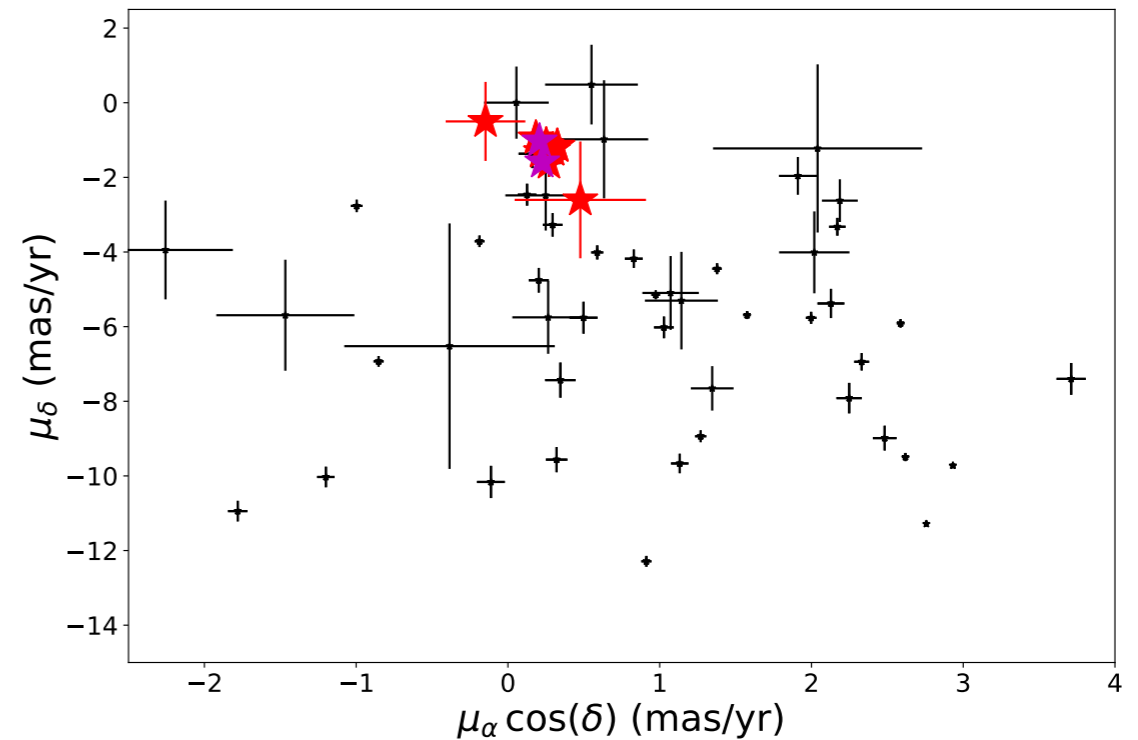
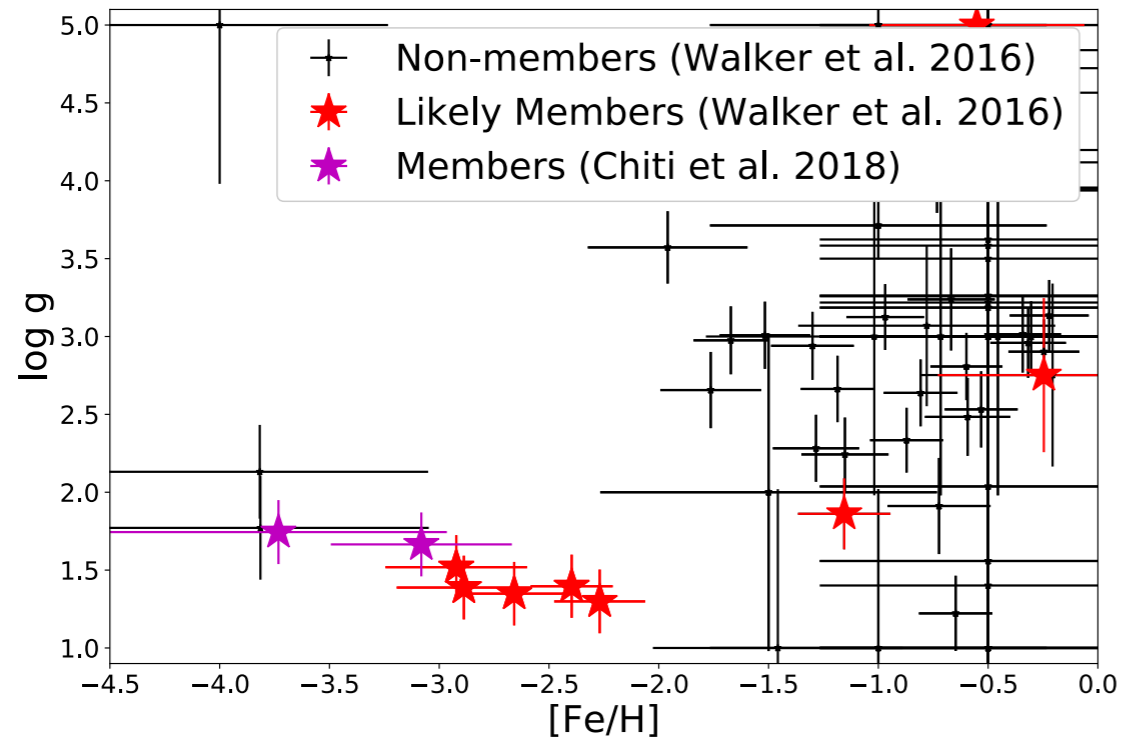
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Ultra-faint dwarf galaxies are some of the oldest systems (~ 13 Gyr) in the Milky Way halo, but their low surface brightness makes it hard to spectroscopically observe their member stars

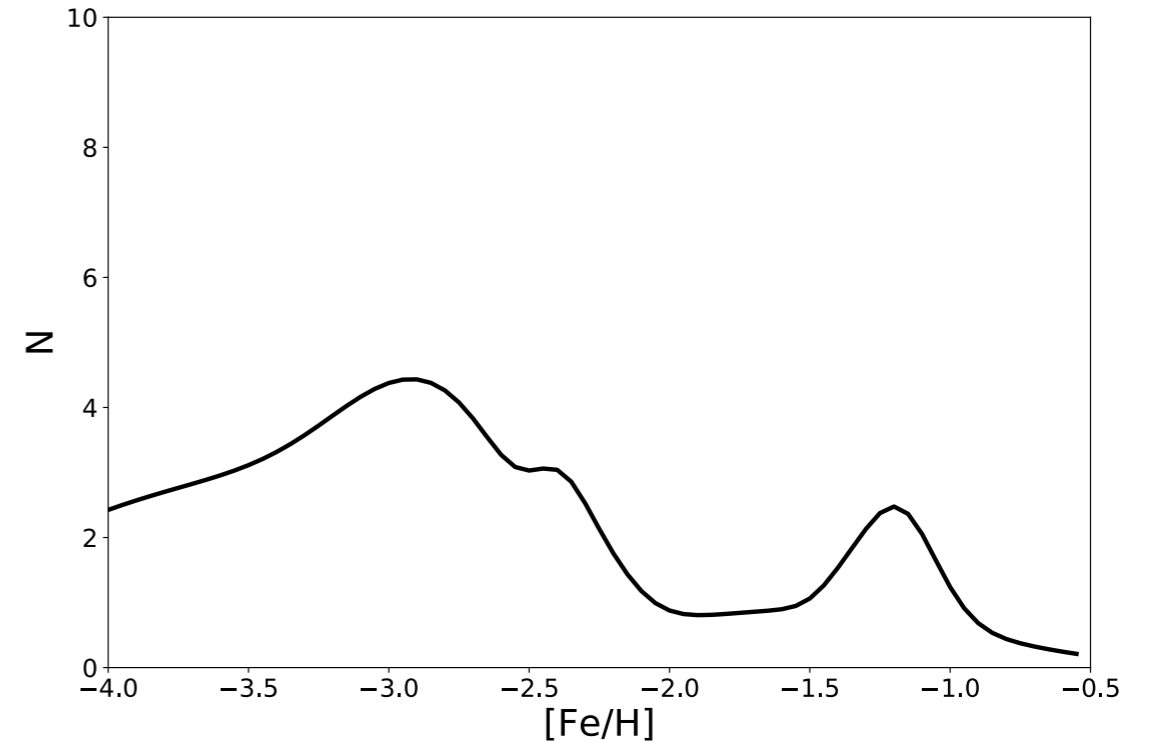
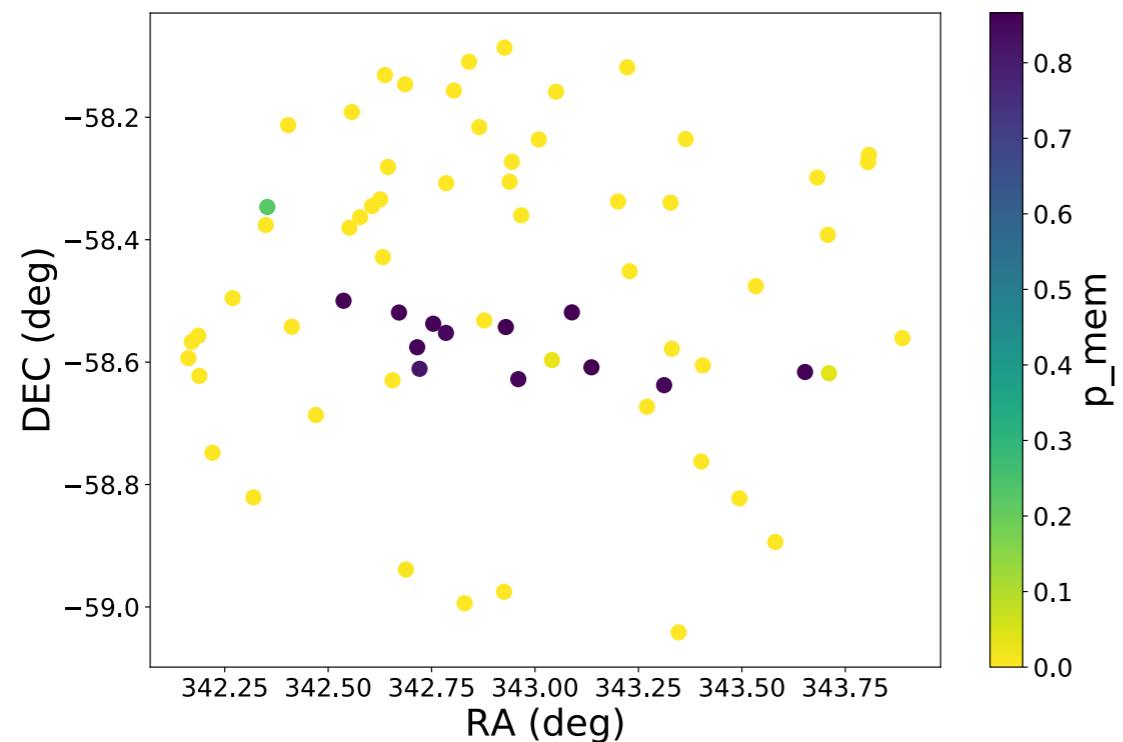
We have obtained deep ($g \sim 21$) photometry of several UFDs using the SkyMapper u, v, g, i filters, with which we derive photometric metallicities and surface gravities of individual stars to more completely characterize these systems (Chiti et al., in prep)



With precise photometric metallicities and photometric surface gravities + *Gaia* proper motions, we can:
1) Very efficiently identify members of UFDs in a spatially unbiased manner (Tucana II shown below)



2) Derive photometric metallicity distribution functions for these systems (Tucana II shown below)



3) We will apply this technique to other UFDs to derive complete, spatially unbiased MDFs and also e.g., identify any possible metal-poor, low surface brightness features associated with these systems