

Abstract Submitted
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Measuring M-dwarf Metallicity through Spectroscopy of Common Proper Motion Binaries at Optical Wavelengths JOSHUA STENZEL, JENNIFER MARSHALL, DANIEL NAGASAWA, LUKE SCHMIDT, TRISTAN TIPTON, Texas AM Univ, TING LI, Fermi National Accelerator Laboratory — M-dwarfs have a lifespan longer than the age of the Universe and therefore are useful in studying the formation of the Milky Way; understanding their metallicities provides a tracer of chemically older populations. We present a method for measuring M-dwarf metallicities by spectroscopy of F/G/K+M common proper motion binary pairs at optical wavelengths. We are in the process of determining an empirical relation between the molecular indices of the M-dwarf, such as CaH and TiO5, and the [Fe/H] metallicity of the Solar-like partner. We obtain high resolution spectroscopy of the F/G/K star for a detailed chemical abundance analysis, and low resolution spectroscopy of the M-dwarf to measure the molecular absorption features. Our analysis uses 50 binaries from the southern hemisphere over a broad range of metallicities and spectral types M0-M4. Future work includes applying this empirical relations to spectra obtained from the Sloan Digital Sky Survey (SDSS).

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