Session 67: Low Luminosity and Degenerate Stars
Display Session, Grand Ballroom

67.01
First Evidence for Particle Beams in a Stellar Flare
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We present broadband linear polarization measurements of the active K5 flare star, BD +26° 730, which show a rapid change in polarization amplitude and direction over a two hour period. After considering and discarding several alternatives, we conclude that impact polarization resulting from flare-generated particle beams is the most likely cause of the observed polarization variations. This result represents the first evidence for particle beams in a star other than the Sun. We estimate the particle energy fluxes required to power the observed polarization changes. From the non-flare polarization level and simple models, we estimate a lower limit to the fractional area coverage of inhomogeneous magnetic regions on the stellar surface. We compare our results with solar flares and suggest further observations.

67.02
A Cost Effective Strategy for Identification of Cool Stellar Targets in ROSAT All Sky Survey Data
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The Roentgen Satellite (ROSAT) x-ray all sky survey will detect on order 10^5 x-ray sources, following a projected 1990 launch. A problem of primary interest is evaluation of the x-ray properties of late M dwarf stars as derived from ROSAT survey data. A useful tool for identification of cool dwarfs which may be detected by ROSAT is the Seward Observatory Near Infrared Photographic Sky Survey. This survey allows easy identification of stellar objects with very large V-I colors; earlier analyses by the author confirm a high rate of cool dwarf detection using this database at high galactic latitudes. We have underway the development of a catalog of cool dwarf stars derived from the infrared survey. These stars will be characterized, where possible, using extant x-ray data and will provide a list for comparison with subsequently obtained ROSAT data. Extraction of very red stars from the infrared survey involves CCD imaging of segments of the 4.5° photographic fields in both V and I bands. The resulting 512 x 512 px images are compared using a video comparator routine resident in a host 80386 microcomputer. The same routine permits rapid and easy measurement of equatorial coordinates. We discuss the methodology for constructing the catalog and outline follow-up observations that would be useful to obtain. A characterization of some of the stars already in the catalog is presented. This work has been supported, in part, by a research grant from the National Aeronautics and Space Administration.

67.03
Photometry of Low-Mass Red Dwarf Stars
H.C. Harris, C.C. Dahn, D.G. Monet, and P.J. Vrba (USNO, Flagstaff)

Photometry in B, V, and I of low-mass red dwarfs is being obtained as part of the program observing stellar parallaxes at the Naval Observatory. Color terms must be carefully evaluated in order to account for the passband of each CCD/filter combination. For these very red stars, with (V-I)_0 as large as 4.8, uncertain color terms are still a significant source of error. We discuss these difficulties and present results for some of the lowest luminosity dwarfs and subdwarfs that we have observed.