ABSTRACTS

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R Coronae Borealis type stars eject large amounts of dust and, hence, are natural targets for analysis with IRAS data. Roughly two dozen R CrB stars can be identified in the IRAS point source catalog. The majority of these show a spectrum where $F_\nu = \nu^{-1.6}$. This is readily understood as the spectrum of a star with a constant ejection rate of dust where the emission efficiency is proportional to frequency. However, roughly a fifth of the R CrB stars exhibit qualitatively different IRAS spectrum ($F_\nu = \nu^{-1}$) with peak flux at 100 $\mu$m and beyond which are typically brighter than the majority. Why do the IRAS spectral types have a bimodal distribution? A possible explanation is that a fraction of R CrB stars are inside planetary nebulae. The IR bright R CrB stars have IRAS spectra indistinguishable from normal planetary nebulae, which are known to have large amounts of dust at great distances from the central star. Indeed, the bright flux at 100 $\mu$m of some R CrB stars implies that they too must have large amounts of dust at great distances from the central star. One (and possibly three) of the IR bright stars are known to have a visible nebula. This suggested explanation for the bimodal distribution of IRAS spectra is supported by calculations of Iben and colleagues where one of several evolutionary scenarios place R CrB stars in planetary nebulae. Specifically, they suggest that some fraction of R CrB stars are formed after a last thermal pulse of central stars of old planetary nebulae.

32.09 X-Ray Variability in K and M Dwarfs Observed by Einstein

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Einstein IPC observations of approximately 15 late-type stars have been searched for short timescale variability (seconds to hours). The photon string for each observation was analyzed by a chi-square procedure developed by Collura, Sciortino, Maggio, Serio, Vaiama and Rosner to detect variability reliably at low count levels. Variability at greater than 99.9% significance for timescales of a few hundred seconds is found for L789-6, EQ Vir and a previously unanalyzed observation of YZ CMi. There is a suggestion of variability (98% significance) for the very late M dwarf CN Leo. The first two sources, as well as CN Leo, appear constant during a second observation. Results for approximately a dozen other stars will be presented, including AD Leo, EQ Peg, BY Dra, CR Dra, Wolf 630 and Ross 614.

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32.10 Spectroscopic Properties of 89 Members of the Kiso Ultraviolet Survey

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A sample of 89 of the ultraviolet excess stars from the Kiso Schmidt survey of Noguchi, Maehara, and Kondo (Noguchi, T., Maehara, H., and Kondo, M. Ann. Tokyo Astron. Obs., 39, 55. and Kondo, M., Watanabe, K., Yutani, M., and Noguchi, T., Publ. Astron. Soc. Japan, 34, 541) are reported. This is part of a continuing spectroscopic survey of ultraviolet excess objects. The data are based on 8-May resolution spectra covering the spectral range 14400-7200 obtained with the Mark II intensified Reticon spectrograph attached to the 1.3mMcGraw-Hill telescope. Subdwarf 0,B, and B stars constitute the majority of the objects; several newly discovered dwarfs and emission line objects including quasars were found. This work was partially supported by the National Science Foundation through Grant AST82-19474.

32.11 On a Possible Close Companion to $a$ Ori

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Analysis of polarization data from 1968 through 1983 indicates that they are consistent with the existence of a close companion to $a$ Ori, with an eccentric orbit having a period of about 2.2 years. Assuming the mass of $a$ Ori is 15-20 M$_\odot$, the semi-major axis of the orbit is only about 2.5 times the radius of $a$ Ori. Our interpretation of certain interferometric data is also consistent with the existence of such a companion.

Analysis of the wavelength dependence of the polarization indicates a 1/A dependence, consistent with Mie scattering by dust grains in an extended envelope. We are led to a picture in which the companion orbits $a$ Ori inside its.