ABSTRACTS

28.03
Wolf-Rayet Stars in the Small Magellanic Cloud
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There are only eight Wolf-Rayet (W-R) stars known in the Small Magellanic Cloud, and all of them have OB companions according to Azzopardi and Breysacher (1979). In contrast, the Large Magellanic Cloud, with four times the mass of the Small Cloud, contains over 100 W-R stars. These stars are generally recognized to be the helium burning descendants of very massive (M > 30 M\(_\odot\)) stars, and therefore they may reflect different star formation rates in the Magellanic Clouds. If indeed they are all binaries, they differ significantly from the W-R population in the Galaxy. We have re-examined their classification, both from optical slit spectra and UV observations with the IUE satellite. Two of the stars do not show evidence for an O-type companion, and one appears not to be a W-R star. We discuss evidence for the binary nature of the remaining stars.

28.04
Balmer Spectra of Flares on YZ CMi
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We present flux calibrated spectra of several flares of the O8e star YZ CMi. The observations cover the spectral range 3200 - 4100 Å, with mean resolutions of 1.2 Å. The data exhibit the following features:

- As in solar flares, continuum and line intensities peak simultaneously. The postflare decline of line emission is approximately a factor two slower than that of the continuum.
- Balmer series emission is observed until n = 14, indicative of flare electron densities ≤ 10\(^{13}\) cm\(^{-3}\).
- During flare maximum, there is an apparent increase in continuum intensity relative to the quiescent flux distribution. The enhancement commences at approximately 3800 Å and extends beyond the Balmer limit. This phenomenon will be discussed in the context of similar behavior often observed in solar flares.

28.05
Chromospheric Activity and Rotation in the Giant Stars in the Hyades and Praesepe Clusters

The Hyades and Praesepe clusters have similar ages (a few x 10\(^8\) years) and each presumably comprises a homogeneous and coeval group of stars. The presence of evolved stars in these two clusters presents an opportunity to study chromospheric activity in giant stars whose ages and masses are similar and reasonably known. There are four KOIII stars in the Hyades and four KOIII stars plus one KOIII star in Praesepe.

The Hyades giants reveal a surprising range of chromospheric and coronal emission despite the similarity of their photospheric properties and projected rotation velocities (Balunis et al., 1983, Ap.J., 271, 672). We therefore monitored the Ca II H and K chromospheric emission strength in the giants in both the Hyades and Praesepe during fall and winter 1983-1984 at least twice a week over a span of about 200 days.

Some conclusions drawn from these data are:
1. The period of rotation was detected by the modulation of chromospheric emission in at least two of these giants.
2. Significant chromospheric variations are present in all these giants. The weakest emission line stars vary by ten percent and the largest fluctuations are twenty percent.
3. The range of chromospheric activity among the KOIII stars in the Hyades (two are relatively strong and two relatively weak) is mimicked by the spread of activity among the KOIII stars in Praesepe. The GOIII star in Praesepe exhibits the strongest relative emission strength.
4. The phase of rotation modulation cannot account for the range in chromospheric emission strength among the four KOIII stars in either cluster. The spread in chromospheric emission may be caused by as yet undisclosed long-term activity variations.

28.06
An Analysis of some 560 stars in the PG Survey
P. Thejll, H.L. Shipman (Delaware), J. Liebert (Arizona), R. Green (KPNO).

We have analyzed a sample of 560 stars from the PG survey. The blue part of the spectrum of these stars shows He II 4686, stronger He I 4471 and a weak H I 4340.

Preliminary results show that the gravity of these objects is in the range of log(g) = 6, the temperature is about 40 000 K, and the hydrogen abundance is a few percent.

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28.07
A Survey of Radio Emission From a Complete Sample of Galactic Wolf-Rayet Stars
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We present new VLA radio continuum observations of 22 Wolf-Rayet (WR) stars. When combined with previous observations, a complete sample of 42 WR stars within 3 kpc of the Sun and above -44° declination has been observed. We derive mass loss rates for each star assuming a thermal wind origin for the radio emission, which is justified in all but one of two cases. The rates all lie in the narrow range 0.5×10\(^{-6}\) ≤ Ω ≤ 0.6×10\(^{-5}\) M\(_\odot\) yr\(^{-1}\), showing no correlation with spectral type, chemical composition, terminal velocity, or binarity. There is a strong correlation between Ω and stellar mass for the five double-lined spectroscopic binaries in our sample. Ω also scales with the emission measure of the stellar wind, as derived from optical recombination lines. The large dispersion in optical line strengths observed for WR stars of the same spectral type is evidently caused by a real difference in Ω, and by implication mass, among members of the same spectral class.

28.08
The Ultraviolet Spectra and Chromospheres of R Stars

The R stars are the warmer carbon stars thought to be clump giants that have undergone mixing of Carbon and Nitrogen into the envelope, likely during the core helium flash. We have obtained well exposed long-wavelength IUE spectra of 12 normal R stars and 2 hydrogen-deficient RO supergiants. The ultraviolet spectra of these stars are remarkable at the 6-A resolution of IUE. Early R stars (R0-R3) have line spectra and levels of flux in the ultraviolet (as measured with an [UE=V] color) characteristic of G5-K2 III stars. A

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