paths. The periodicities appear as diagonal stripes in dynamic spectra with characteristic separations of 0.1 to 1 Hz and -10 to 100 sec. We show that a power spectrum analysis of the dynamic spectra can lead to at least partial construction of an effective image for the pulsars during episodes of multiple imaging. We also derive constraints on the shape of the power spectrum of electron density fluctuations in the interstellar medium.

05.12
Predictions of Ultraviolet Polarization and the Constraints Imposed on Dust Parameters
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An excellent empirical fit to the observed wavelength dependence of interstellar polarization has been given by Wilking et al. (AJ, 87, 695, 1982):

\[ P(\lambda) = P_0 \exp(-K \lambda \ln^2(\lambda/\lambda_0)) \]

where \(K = 1.7\) and \(\lambda_0\) is the wavelength of maximum polarization. Mathis (1986, Ap.J.) has shown that this law is well explained by assuming that each grain is a composite of small particles and that some of these small particles, possibly metallic Fe or magnetite, have very large paramagnetism ("superparamagnetism", or SPM). Only those grains which contain one or more SPM particle are aligned in the galactic magnetic field. The optical \(P(\lambda)\) law is fitted very well with these assumptions, with one free parameter: \(a_1\), the radius of the grain which has a probability of 1/e of containing at least one SPM particle. For the fitting a power-law distribution of sizes, \(n(a) = a^{3.5}\), was used with \(a = 3.5\), extending from the sizes \(a_0\) to \(a_1\).

The present work is in anticipation of the NASA Shuttle flight of ASTRO-1 with the Wisconsin Ultraviolet Photo-Polarimeter Experiment aboard. This device will measure \(P(\lambda)\) through the ultraviolet. The theory of Mathis (1986) outlined above is extended into the UV, taking account of the \(\lambda\)-dependence of the indices of refraction of silicates and the size dependence of the alignment. Predictions are made for \(P(\lambda)\) for

05.13
Ultraviolet Observations of Young Stars in the Chamaeleon 1 Association

In January 1985 the International Ultraviolet Explorer (IUE) satellite was used to obtain spectra of a sample of 10 pre-main sequence stars in the Chamaeleon 1 association. These stars ranged from 10-2 to 13.6 in visual magnitude and from G2 to M0 in spectral type. Low dispersion Mg II fluxes were obtained for all the stars and long (>6 hour) low dispersion, short wavelength spectra were obtained for five of the stars. The level of chromospheric activity shown by the star LHS 332-21 (K0, V=10.9) was found to be roughly an order of magnitude higher than that shown by the other stars. The significant variability was seen in the Mg II fluxes of five of the stars. The observed ultraviolet line fluxes will be presented and compared with previous observations made in other spectral regions. Properties of the outer atmosphere structure of LHS 332-21 will be discussed.

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05.14
The M8 Hourglass Core: A region of Recent Star Formation
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Moderate spatial resolution observations of the M8 Hourglass (H0) (Woodward et al. 1985 A. J. submitted), a compact HII region exhibiting non-standard reddening, strong 3.26 \(\mu\)m band emission and peculiar optical and radio morphology, have suggested the presence of compact sources. We present here new, higher resolution spectroscopic observations (\(<2.5\)"/pixel) in the [SII] \(\lambda\)6716/6731 \(\lambda\) optical emission lines in order to identify areas of density enhancement, and 2.2 \(\mu\)m images (\(<30\)"/pixel) of the HII in order to search for compact embedded sources. The 2.2 \(\mu\)m images reveal a previously undiscovred compact IR source \(<1.4\)'E, \(<3\)'N (KSI2) of Herschel 36 in the enveloping optical nebulousness, in addition to another source \(<10\)'E, \(<1\)'N (KSI2) of Herschel 36 in the main body of the HII. The [SII] observations indicate that the region is clumpy and non-homogeneous with a density knot along the line of sight to KSI1. The strongest density peak is near the western 5 GHz radio knot.

05.15
Extended Far-IR Emission Associated with Young Star Molecular Outflow
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Co-added IRS survey data have been used to examine the infrared properties of molecular outflows associated with young stars. We find extended IR emission, apparently coincident with the L1551 IRS 5, T Tau, R Mon, and B135 00 molecular flows and possibly with R CrA and Haro 6-10. In this contribution, we present a preliminary analysis of the far-IR properties of the L1551/IRS 5 region. Below, we present a contour map of the 60\(\mu\)m emission associated with the outflow; these contours generally follow the outer contours of the flow mapped by CO.

The summed 60\(\mu\)m and 100\(\mu\)m luminosity of the extended emission associated with the flow is 2 L\(_{\odot}\). From the average 60\(\mu\)m/100\(\mu\)m color temperature characterizing the region (25-25\(^\circ\)K), we estimate a total luminosity of \(~4L_{\odot}\) for the extended emission. By comparison, the lower limit bolometric luminosity of the source powering the outflow (IRS 5) is 30 L\(_{\odot}\); the mechanical luminosity from the IRS 5 wind (\(~10^{39}\) \(\dot{M}\)\(v_{wind}^2/200\) km \(s^{-1}\)) is \(~10^{39}\) L\(_{\odot}\). The far-IR emission can thus be powered either by collisional heating of grains (in shock-excited region at the outflow/cloud boundary) or by radiation emanating from IRS 5.

05.16
The Relationship Between Disks, Mass Outflows and Global Cloud Structures from Young Stellar Objects
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Optical tracers of mass outflows have been identified from monochromatic CCD images of: Haro 6-5B, Haro 6-10, Haro 6-13, Haro 6-33, DSO Tuc, DSO Tuc B, MM 30, MM 31, L 1551 IRS 5, IRAS 16293, HIC 71, and IRS. In five of these cases, the nominal flow directions lie within 15\(^\circ\) of molecular cloud magnetic field direction as determined from the polarization of nearby stars viewed through the periphery of the Taurus cloud complex; 7 lie within

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