cludes the effects of the local ambient radiation field, is used to follow the ionization in the expanding gas. The predictions for the present ionization of the local ISM are compared with the equilibrium calculations of Cheng and Bruhweiler. These results are quite relevant to understanding the nature of the diffuse Hα emission seen in the galactic plane and for observations to be made by the soon to be launched *Extreme Ultraviolet Explorer (EUVE)* satellite.

30.02
Hot Bubbles in a Magnetic Interstellar Medium: Another Look at the Soft X-ray Background

Richard J. Edgar, University of Wisconsin-Madison

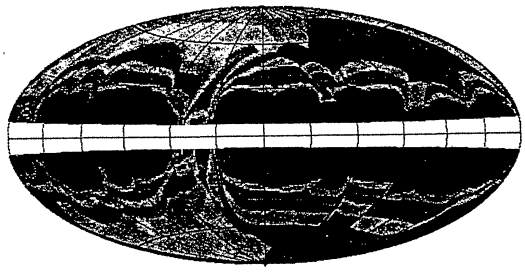
We investigate the proposition that the solar system resides in a region of hot gas with an extent of roughly 100 pc. The hot bubble is assumed to be the remnant of one or more supernovae exploding in close proximity a few million years ago. The ambient medium is assumed to be dominated by magnetic pressure, with $B \sim 5$ to 20 μG. The hot bubble expands, reaches a maximum radius after ~ 1 to 2×10^6 yr, and then contracts again due to magnetic pressure in the surrounding cold (but not very dense) shell. We attempt to model such events with a one dimensional hydrodymics code, assuming that the magnetic field is frozen into the gas and everywhere tangential. X-ray surface brightnesses are compared to measured results, and column densities of UV-observable ions are calculated. A grid of models with various explosion energies, ambient densities, and ambient magnetic fields is explored.

30.03
Modelling The Diffuse HII In The Solar Neighborhood

W.W. Miller III and D.P. Cox (U. Wisconsin)

It is well known, both from pulsar dispersion measures and the observed Galactic Hα background, that diffuse ionized hydrogen exists at large distances from the Galactic plane ($|z| \geq 1000$ pc). The source of energy for the ionization, however, remains uncertain. Various mechanisms for producing this ionization have been proposed. Among them, only O stars appear capable of providing the necessary power.

We have taken a catalog of all known Galactic O stars and calculated their HII regions in various hybrid density ISM models from which the projected distributions of dispersion measure and emission measure on the sky at the Sun's location have been computed. Electron densities as a function of Galactic altitude z have also been calculated. We present results from these models.



180 0 -180
Model Results for Dispersion Measure in Galactic Coords.

30.04
The Distribution of Interstellar Dust in the Solar Neighborhood

J. Gaustad, M. Alford, M. MacKenzie, S. Sample (Swarthmore), F. Crawford (Williams), G. Garber (Haverford), M. Hampton (Stanford), D. Marshall (Chester H. S.), and D. Van Buren (IPAC)

We have surveyed the IRAS data base at the positions of the 1808 O6-B9 stars in the Bright Star Catalog for extended objects with excess emission at 60 microns, indicating the presence of interstellar dust at the location of the star. Within 160 pc, where the survey is complete, the filling factor for dust clouds with a density greater than 1 cm^{-3} is 10.6%±1.4%. For the entire survey, the corresponding filling factor is 9.0%±0.7%. When the dust clouds are mapped onto the galactic plane, the sun appears to be located in a low density region of the interstellar medium of width about 80 pc extending at least 500 pc in the direction of longitudes 80°-260°, a feature we call the 'local trough'.

30.05
The Wake of the Pleiades Through the Interstellar Medium In Taurus

R. E. White (FCAD), J. Bally (BTL)

A mosaic of IRAS coadded images covering 8.7°x4.3° reveals an emission "cavity" with bright rims that extends some 5° eastward from the Pleiades. This is a novel interstellar structure, the wake of the cluster created as it travels supersonically through the interstellar medium, photoelectrically heating ambient gas with its 10^4 L_{sun} of soft ultraviolet photons. Several pieces of evidence indicate the existence of a bow shock on the upstream (western) side of the cluster. The radial velocity shifts associated with the bow shock provide a strong constraint on the orientation of the gas flow, and hence on the space motion of the cloud. This motion is consistent with a cloud origin some 15 Myr ago in an energetic event in Gould's Belt near l= 60° and low positive b. The motion also implies that, in spite of proximity in space and similarity in radial velocity, the interstellar matter near the Pleiades is kinematically unrelated to the star forming complexes in Taurus and Perseus. Review of data for the larger Perseus/Taurus region leads to a schematic view of the spatial structure of the interstellar medium in this region.

30.06
Interstellar Gas Phase Abundance of Carbon, Oxygen, Nitrogen, Copper, Gallium, Germanium, and Krypton Toward ζ Ophiuchi

J. A. Cardelli, B. D. Savage, U. J. Sofia (U. Wisconsin-Madison)

We present an analysis of weak (<10 mÅ) UV interstellar absorption line data obtained with the Goddard High Resolution Spectrograph echelle modes for the line of sight to the O9.5 IV star ζ Oph. Accurate measures of weak lines of N I], O I], Cu II and a new UV detection of Na I are reported along with a small upper limit for C II]. Reliable interstellar detections of Ga II, Ge II, and Kr I are also presented. Ga, Ge, and Kr represent the heaviest elements detected in the ISM. Comparison of the derived column densities to cosmic abundances shows Ga is depleted by about -1.2 dex while Ge is overabundant by +0.2 dex. However,