low upper limits to their emission. For the strongest hyperfine transition of CN we found a 90 M_k line also had a width of about 30 km/s, similar to that of the 17CO line in the source. Our detection suggests that this molecule is produced via photodestruction of HCN. In addition, we measured a 17CO line maximum of T_a < 10 mK, which gives an oxygen-18 abundance limit that is consistent with solar. We also limited the maximum C_H emission to T_a < 10 mK. This result suggests that this molecule is not produced in abundance by the photodestruction of C_2H, as some theoretical models indicated.

21.22 Carbon Monoxide Emission vs. Atomic Hydrogen Self-absorption in the Galactic Plane. by Peter F. W., Mount Stromlo and Sliding Spring Observatories, and BASH, F. N., Un. of Texas. Observations of the 12CO (J = 1,0) line have been compared with 21 cm HI observations made at similar angular and velocity resolution in the Galactic plane at longitudes between 40° and 56°. It was found that a third of the CO clouds had HI self-absorption counterparts. A statistical analysis indicates that the correlation is significant and consistent with the view that enough cold atomic hydrogen exists in molecular clouds to noticeably affect the HI emission line profiles. The results of this analysis are shown and the mean properties of those CO clouds that correspond to HI clouds are compared with the properties of those that do not.

21.23 Near Infrared Polarimetry of Molecular Clouds. T. Simon, U. Hawaii, H. Joyce, KPO. We present preliminary results of an observational program to measure the spatial distribution of polarized continuum radiation from molecular clouds known to have high velocity flows in CO and H2. We have made partial maps of the W band (2.2 um) polarization in Cep A, Sh 140, Sh 255, and NCG 2071. We detected extended areas of high polarization (10%) in several regions. In Cep A, we have mapped approximately 30 percent of the area from which both high velocity CO and shock excited H2 have been observed, and have detected polarization up to 7% over large areas. These clouds are systematically aligned in a manner which suggests scattering from a compact central infrared source; however, the polarization may be too large to be explained solely by single scattering, and a mechanism for alignment of the grains may be required.

21.24 Cores of Clouds with Low Luminosity Outflow Sources. J. A. Davidson, D. T. Jaffe, and R. H. Hildebrand. We have made far-infrared and 5mm observations of three compact embedded sources, all of which have antistellar molecular outflows. These are L1551B335 and L1455 which were found to have luminosities of 28M_L and 2L_L respectively. Our 5mm observations combined with CO molecular line data of others, enable us to place constraints on models which use isotopic stellar winds channelled by oblate mass distributions to explain these outflows. L1551, for example, has a core mass distribution which could only withstand the pressure, suggested by the CO observations, due to an isotropic wind, if there were a hidden oblate mass distribution (e.g. Blackbody Disk) within the core. Limits on such a disk for L1551 were found to be: Radius of Disk > 2.4 and Temperature of Disk > 40K. Some models will be discussed in light of these constraints. This work was supported by NASA Grant NGR 2057 and NSF Grant AST 8117134.

21.25 Observations of 21-cm Absorption Toward Double Sources. J. Crovisier, Observatoire de Meudon, J.M. Dickey, University of Minnesota. In order to investigate the small-scale structure of galactic neutral hydrogen, 21-cm absorption profiles have been measured with the Vasterrork Synthesis Radio Telescope toward the components of 7 double continuum extragalactic sources. The simple source structure allows an easy reduction by model fitting. The angular separations of the components range from 0.7 to 7 arcmin. Significant absorption differences were found between the components of each pair, over linear scale-lengths that may be as small as 0.2 pc. These differences may be attributed to optical depth variations and/or velocity gradients within the HI clouds.

Session 23

23.08 Analytical Solutions for Finite Toomre Disks. J. H. Hunter, Jr., J. K. Ball, L. Florida. We present exact, analytical solutions, in closed form, for truncated Toomre Disks of any order. In all cases, the circular velocity exhibits a discontinuous drop just beyond the truncation radius, and approaches Keplerian behavior at large r. Of particular interest is the Toomre Disk of index n=3 (a generalized Mestel Disk), which resembles most Spiral Galaxies in that the circular velocity within the disk increases monotonically up to the radius of truncation. Simple linear combinations of these finite disks can provide a plausible fit to observed rotation curves. This research was sponsored, in part, by the National Science Foundation Grant N NSF AST 8116312.

Session 24

24.01 Voyager 2 Far-Ultraviolet Observations of Sirius B. J. B. Wulber, Center for Space Sciences, UPS, F. W iesemann U. of Montreal, I. Hruby, Astron. Inst. of the Czechoslovak Academy of Sciences, W. T. Forrester and D. C. Barry Center for Space Sciences, USC. Far-ultraviolet observations of Sirius with the Voyager 2 ultraviolet spectrometer show, for the first time, the energy distribution of the white dwarf Sirius B shortward of Lyman u. Below 1100 Å continuum emission from Sirius B dominates the composite spectrum of Sirius. In this wavelength range residual emission from Sirius A has been removed using Voyager 2 observations of Vega. Analysis of the Sirius B 980-1300 Å energy distribution, and its comparison with Voyager 2 observations of the DA white dwarf CoR-38° 10980, indicates a range of Photospheric temperatures somewhat lower than those recently determined by Martin et al. (1982) (Ab. 1261, L81) from HEAO 1 soft X-ray observations.

This work was supported in part by NASA Grant NAGW-147 and by the NSERc Canada.

24.02 Numerical Simulation of Type II X-Ray Bursts. G. A. Linford, H. A. Kauferi, S. H. Lea, J. C. Peters, San Francisco State University. We have developed a computer code to model the Type II burst mechanism. Using a fully explicit, Lagrangian, hydrodynamic computer code to investigate the time dependent behavior of spherically symmetric radial flow on a magnetized compact object. Plasma enters into the magnetosphere via the Rayleigh-Taylor instability which is controlled by Bresenstrahling cooling at the magnetopause.

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