low upper limits to their emission. For the strongest hyperfine transition of CH we
found a 30 km/s. This line also had a width of about 30 km/s, similar to that of the 13CO
line in the source. Our detection suggests that this molecule is produced via photo-
destruction of HCN. In addition, we measured a 13CO line maximum of T^A \approx 10 mK, which gives
an oxygen-18 abundance limit that is consistent with solar. We also limited the maximum C2H
emission to T^A \approx 10 mK. This result suggests that this molecule is not produced in
abundance by the photodestruction of C2H, as some theoretical models indicated.

21.22 Carbon Monoxide Emission vs. Atomic Hydrogen
Selfabsorption in the Galactic Plane.
by PETERBERG, W., Mount Stromlo and Sliding Spring
Observatories, ANU and BASH, F.N., U. 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 54°. 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 corre-
spond to HI clouds are compared with the properties of those that do not.

21.23 Near Infrared Polariometry of Molecular
Clouds, T. SIMON, U. Hawaii, R. JOYCE, KPNO.
We present preliminary results of an observational program
to measure the spatial distribution of polarised
continuum radiation from molecular clouds known to
have high velocity flows in CO and H2. We have made
partial maps of the K band (2.2 um) polarisation in
Cep A, Sh 140, Sh 255, and NGC 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 70% over large areas.
The polarisation is 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
cattering, and a mechanism for alignment of the
grains may be required.

21.24 Cores of Clouds with Low Luminosity
Outflow Sources.
J.A.DAVISON, D.T.JAFFE. and R.H.HILDERBRAND.
We have made Far-Infrared and sub-mm observations of three
compact embedded sources, all of which have astrophotonic
molecular outflows. These are L1551, L833, and L1455
which were found to have luminosities of 25M \odot \approx 2L\odot and
2L\odot respectively. Our sub-mm observations combined with CO
molecular line data of others, enable us to place
constraints on models which use isotropic 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 \approx 2\odot and Temperature of disk \approx 4K. Some models will be
discussed in light of these constraints. This work was
supported by NASA Grant NPG 2057 and NSF Grant AST8117134.

21.25 Observations of 21-cm Absorption toward Double Sources, J. CROVISIER, Observatoire de Meudon,
J.W. DICK, University of Minnesota.
In order to investigate the small-scale structure of galactic neutral hydrogen, 21-cm absorption
profiles have been measured with the Vesterbrook Syn-
thesis 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 optimal depth
variations and/or velocity gradients within the HI
clouds.

Session 23

23.08 Analytical Solutions for Finite Toomre Disks, J.
J. Hunter, Jr., J. R. 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 as radius increases. Of particular interest is the Toomre Disk of index m\approx 3 (a generalized
Westorf Disk), which resembles most Spiral Galaxies in that the
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 # NSF AST
8116312.

Session 24

24.01 Voyager 2 Far-Ultraviolet Observations of
Sirius B. J. B. HOLMBERG, Center for Space Sciences,
USC, F. WISSEL, U. of Montreal, T. HUBENY, 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
shortwards of Lyman a. 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 980-1100 Å energy distribution,
and its comparison with Voyager 2 observations of the
DA white dwarf CoRo-38 at 10980, indicates a range of
photospheric temperatures somewhat lower than those
261, L81) from HEAO I soft X-ray observations.
This work was supported in part by NASA Grant
NAGW-167 and by the NSERC Canada.

24.02 Numerical Simulation of Type II X-Ray
Bursts, G. A. LINFORD, H. A. KINARD, S. H. LEO,
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 inves-
tigate 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 con-
trolled by Bremsstrahlung cooling at the magneto-
opause.