be settled directly on the top MCP, or on a separate thin substrate. Efficiencies of 40% at 8 Angstroms and 60% at 44 Angstroms have been obtained, which are greater by factors of 5 and 2 respectively than the Einstein HRI efficiencies. A wedge-strip-interstice (WSI) anode was used to collect the electron charge pulse from the MCPs. NRL has produced the WSI pattern in gold on quartz substrates using modern electron beam lithography techniques. The WSI anode uses simple geometric charge division to obtain position information and the equations used to calculate the centroid of the charge spot are linear to zeroth order. Pulses from the three WSI electrodes are amplified by Canberra preamps and amps, and then digitized. The ADC outputs are processed in real-time by an Omnibyte 68K Multibus computer which consists of a Motorola 68000 16/32 bit microprocesser with supporting logic, interfaces, floppy and hard disk memory, and a FORTH operating system. Command and numerical output are handled by a DEC VT 100 terminal. Images and plots are displayed by a VECTRIX color graphics system with 13" color CRT, and a color PRISM printer. A software package has been written to provide pulse-height analysis, archiving and retrieval of data, plots of one-dimensional cuts through the images, color changes, and output of valid and invalid data. Using a 10 micron slit and a multipinhole mask of 10 micron holes we have measured the resolution and uniformity of EXI. Preliminary results show a resolution of 1 part in 650, and a resolution of 1000 should be easily obtainable.

26.03
Observing the Primeval Explosion with the Cosmic Background Explorer Satellite (COBE)

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The Cosmic Background Explorer[1] (COBE) satellite will observe the diffuse infrared and microwave background light of the universe, thought to be the remnant of the primeval explosion. It will map the sky with three instruments. The Differential Microwave Radiometer (G. Smoot, PI) will measure the anisotropy of the background at 3.3, 5.7, and 9.6 mm wavelength, with an angular resolution of 7^{o}. Its temperature resolution is 0.15 $m^{o}K$ per pixel at 3.3 and 5.7 mm, and 0.3 $m^{o}K$ at 9.6 mm. The Far Infrared Absolute Spectrophotometer (J. Mather, PI) will cover the spectral range from 0.1 mm to 10 mm with a 5% spectral resolution and a beamwidth of 7^{o}. Its sensitivity for νI_{ν} is about 10^{-13} $W/cm^{2}sr$ per pixel and spectral element, giving a SNR of 1000 at the 3K blackbody peak. The third instrument, the Diffuse Background Experiment (M. Hauser, PI), will cover the range from 1 μm to 300 μm with a 1^{o} F.O.V. using 10 filter bands. Its sensitivity for νI_{ν} is also 10^{-13} $W/cm^{2}sr$, which is expected to reveal the diffuse IR from the first generation of galaxies.

NASA/GSFC is serving as prime contractor for the spacecraft and the instruments. The two infrared instruments require a superfluid helium cryostat, like that of IRAS, which is being built by Ball Aerospace. Launch is expected in late 1987 and the data base will be made available to the public two years after.

[1]Optical Engineering 21, 769 (1982)

26.04
Stars of Large Radial Velocity in the Stock Velocity Survey

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Slit spectra have been obtained for 82 stars for which the objective-prism radial velocity survey of Stock (Stock Velocity Survey: J. Stock, Rev. Mex. Astron. & Astrophys., in press) listed radial velocities over 130 km/sec in magnitude. The slit spectra revealed that many of these objects are F-K stars of low metal abundance, including some objects apparently as metal-weak as presently known. Radial velocities were derived from the slit spectra to examine the reliability of the large objective-prism velocities. The slit results confirm that the majority of the stars are indeed high velocity objects, but show that the objective-prism technique tends to produce velocities systematively too large in magnitude by about 40 km/sec. It was also found that a large objective-prism velocity that is of low weight or from spectra near a plate edge is likely spurious. When care is taken to avoid such cases, 85% of the high velocities in Stock's survey are reliable.

A search of the 10,000 entries in the Stock Velocity Survey catalogue yielded 203 objects with radial velocities over 130 km/sec, of which 77 are not suspect because of low weight or edge proximity. These high-velocity objects form two distinct groups: metal-weak F-K stars and spectroscopically normal main sequence A-stars. The data to date for these interesting stars and our plans for future observations are presented.

26.05
Membership in the Open Cluster NGC 2287

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The open cluster NGC 2287 (M41) is an interesting cluster apparently rich in multiple stars and has been reported to contain a He-weak star, three Hg-Mn stars, and a cool Ap star among other spectroscopically interesting objects. (Levato and Malaroda, Publ. A.S.P., 91, 636, 1979). Here we report the first proper motion membership study for this cluster. Color-color and color-magnitude diagrams are presented, as well as membership probabilities. UBV photometry of 154 stars obtained at CTIO were reduced and compared to the data of three previous works on the cluster. We see how well the other data fits ours, and by using a least-squares fit, we put their data on the same system as ours. Stars which were not included in our survey are then added to our data, and combined color-color and color-magnitude diagrams are plotted. Membership probabilities are calculated using plates from the McCormick plate collection covering an 80 year span. The proper motions are calculated in several ways: with the usual three plate constant reduction model, with magnitude terms, and with both magnitude and color terms. Finally, the color-color and color-magnitude diagrams for the likliest members are presented.

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26.06
Synchrotron Emission from Chaotic Stellar Winds

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A new model is presented for the radio emission from hot stars. Electrons are accelerated to relativistic energies by shocks in the wind near the star and emit radio radiation far out in the wind through the synchrotron mechanism. The particle energy spectrum and radio spectrum for this model have been calculated; the model can account for many of the observed characteristics of some recently discovered stars which have peculiar radio emission.