11.04 Anomalous Extinction Toward HD 29647, J. H. Gobeil, NASA-ARC.

The anomalous ultraviolet extinction curve of HD 29647 has been discussed by Snow and Seab (1980). They hypothesized that ice mantles could account for the missing 2200 Å feature. The near infrared spectrum presented here show the presence of the H₂O ice band at 3.1 μm. The extinction curve can now be understood. It is also concluded that the diffuse interstellar features, which are weakened in the star's spectrum, are due to grain cores rather than gaseous species or other mantle materials.


11.05 Diffuse Galactic Light Intensities and Interstellar Dust Characteristics, G. W. Toller, Space Astron. Lab., U. Fla.

Observational diffuse galactic light (DGL) levels at 4400Å are presented as a function of galactic latitude (b). A peak in the ratio of DGL to direct starlight is apparent at |b| = 5°-15°. The relationship DGL(8.0 V) / DGL(4400Å) = 2.4 x 10⁻⁶ N_H atoms cm⁻² may be used to estimate the brightness of DGL from neutral hydrogen column densities when N_H < 10¹⁰ atoms cm⁻².

A gas model that reproduces observed brightness levels is used in conjunction with the Henyey-Greenstein phase function to compute single and multiple scattering intensities. The effects of grain morphology and observed DGL values for 29 lines of sight determine two grain parameters - the albedo (ρ) and the asymmetry of the scattering phase function (g). The results are ρ = 0.1 ± 0.07, g = 0.6 ± 0.2. The research was supported by the Pioneer Project Office and by NASA Headquarters.

11.08 Measurements of the Strengths of Narrow Diffuse Interstellar Bands toward OB Stars with Low Reddening, S.R. Federman and P.A. Vanden Bout, Univ. Tx. at Austin, and C.K. Kumar, Howard Univ. - A search has been made for the presence of the narrow interstellar diffuse bands at λλ 5780, 5797, 6283, and 6613 in the spectra of a sample of 20 stars all having low reddening (E(B-V) < 0.12) and interstellar H₀ column densities that are either high [N(H₀) > 10¹⁸ cm⁻²] or low [N(H₀) < 10¹⁷ cm⁻²]. The diffuse band equivalent widths are significantly stronger for low reddening than for those with small N(H₀). This correlation and the lack of any correlation with reddening strengthen the conclusion of an earlier survey [Ap. J. (Letters), 261, L51], restricted to λλ 5780 and 5797 and including only 8 stars, that the diffuse bands have a molecular origin. Abundance considerations suggest that the responsible molecules are in grain mantles rather than the gas. Research supported in part by a grant from the Robert A. Welch Foundation to P.V.B. and in part by NSF grant AST-8152548 to C.K.K.

11.09 Observations of Neutral Hydrogen and Deuterium toward α Cen. W. B. Landsman, R. C. Henry, H. W. Woods, Johns Hopkins Univ., and J. L. Nissen, JILA, NSI, and U. of Colorado - We have analyzed high-dispersion IUE spectra of the Ly α line of α Cen A, in order to derive interstellar parameters along the line of sight. The geocoronal contribution has been removed by subtracting enough of a pure geocoronal spectrum to make the interstellar core go to zero flux. Agreement with a previous 1976 Copernicus observation (McClelland et al. 1978 Ap. J., 225, 665) is excellent, and the derived interstellar parameters are similar. A change in the line shape of the blue wing of the line seen in a 1978 Copernicus observation, remains unexplained. The best fit models to all 3 spectra have a bulk velocity of deuterium which differs by ~5 km/sec from that of hydrogen, consistent with the ideas of Bruston et al. (Ap. J., 243, 161, 1981).

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