ANALYTICAL MODELS OF PROTOPLANETARY DISKS IN THE ORION NEBULA

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We have constructed analytical models of the gaseous objects in the Orion Nebula variously referred to as partially ionized globules (PIGs), LV globules, and protoplanetary disks (proplyds). We are applying these models to the *HST* observations of proplyds published since 1993 by various groups, and finding that we can constrain certain structural parameters for the proplyds.

The proplyds are modeled as isothermal objects whose particles are in Keplerian orbit around the central stars, and whose structure normal to the orbital plane is due to hydrostatic equilibrium. Our use of the term "disk" does not mean that the proplyds are necessarily thin and flat.

We consider how the size of a proplyd can be limited by the effects of the radiation field of Theta1C Orionis, the principle ionizing star in the Orion Nebula. Making the assumption that certain subsets of the observed proplyds obey similar surface-density power laws allows us to constrain the parameters in those laws. This approach is also of interest because it does not require one to assume optical thicknesses for the proplyds.

Our detailed results will be published in the near future.

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HST PARALLEL WFPC2 IMAGERY OF THE CARINA NEBULA: EGGS(?) AND PROPLYDS(?) IN DARK CLOUD RIMS AND BOK GLOBULES

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As part of the *HST* GO-6042 program, parallel WFPC2 images of locations in the large Carina H II region were taken during a series of FOS spectra of several ejecta of Eta Carinae (see Glover et al., these proceedings). The observations were scheduled during two CVZ (continuous viewing zone) visits in 1995 October, enabling deep WFPC2 exposures to be taken in ten filters. The "serendipitous" target was an area which included the Cr 232 star cluster and surrounding H II region, about 8 arcmin to the NW of Eta Carinae itself. Images of the nebula were obtained in the filters F656N (Hα), F673N ([S II] 6717+31 Å), F658N ([N II] 6583 Å), F502N ([O III] 5007 Å), and F547M (continuum) to study the ionization structure. In addition, relatively long ($\sim$ 1000 sec) exposures were obtained though the wide-band filters F336W, F439W, and F555W for purposes of obtaining UBV magnitudes and colors of stars down to a limiting magnitude of V$\sim$ 25.

We present the results of this imagery in the form of (*a*) color-coded emission line ratio maps of the nebulosity in the various lines noted above, and (*b*) color-magnitude (CMD) and color-color diagrams of stars in the field. At a distance of 2500 pc for the nebula and cluster, the spatial resolution of 0.1 arcsec on the WFPC2 imagery corresponds to 250 AU per pixel, a scale that resolves numerous Bok globules not previously seen from ground-based imagery. These globules are seen in absorption in the [O III] images and with bright rims in [S II] and [N II], indicating their proximity to the cluster OB stars and location in the ionized volume of the nebula. Our CMDs, (very preliminary) reach $M_V \sim +11$ for stars at the distance of the Cr 232 cluster. A prominent reflection nebula is also seen around one of the stars in the cluster.

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COROTATION RADII IN SPIRAL GALAXIES

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Shock induced star formation in a stellar density wave scenario produces an azimuthal gradient of ages across the spiral arms which has opposite signs on either side of the corotation resonance (CR). Schweizer (1976) and Beckman & Cepa (1990) have previously discussed what would be the behavior of the colors across spiral arms when the shock generated by a spiral density wave (SDW) induces star formation. The main azimuthal observable characteristics of this scenario are steeper azimuthal profiles and bluer color indexes on the side where the shock front is located. Elmegreen, Elmegreen, & Montenegro (1992) also pointed out that such evidence for the CR is clear in gas-rich galaxies in the form of sharp