A Morphological Study of Dark Dust Clouds

S. S. Hong[1], S. M. Lee[1], H. G. Kim[2], and S. M. Kwon[3]
[1] Department of Astronomy, Seoul National University, Seoul, Korea
[2] Korea Astronomy Observatory, Taechon, Korea
[3] Department of Science Education, Kangwon National University, Chuncheon, Korea

The star counting is often used to delineate the boundary or morphology of dark clouds. This method has an advantage of getting information on the extinction rendered by a cloud, but requires an excessively large amount of human efforts. Instead of counting stars individually, Fourier filtering can be utilized for removing the stellar images from the cloud surface. The PDS microdensitometer can efficiently digitize the cloud images in POSS print in reflectance. The two dimensional distribution of the reflectance measurement is Fourier transformed, and high frequency amplitude is then cut off, which is an easy way of removing stars from the reflectance image of the cloud. The remaining Fourier spectrum is inverse Fourier transformed. In this way one may have an objective means of demarcating the cloud boundary.

The Bok globule B 361 is taken as a test object of the method. The resulting morphology of B 361 will be compared with the morphologies from star counting maps, IRAS images, and CO emission maps.