magnitude $\langle M \rangle$ and the reduced proper motion H for main sequence stars had been applied to the all sample of proper motion stars. The relations between $\langle M \rangle$ and H for subdwarfs and white dwarfs as well as main sequence stars are derived and applied seperately to each group of stars.

The Disk Accretion of a Tidally Disrupted Star onto a Massive Black Hole

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We consider the consequences of the tidal disruption of a star by a massive black hole. We argue that the initial extremely eccentric orbit of the stellar debris will become a circular orbit near the tidal radius after experiencing strong shocks which thermalize the orbital energy on a relatively short time scale. The subsequent evolution of the accretion disk is studied using a time dependent α-disk model. The luminosity evolves asymptotically toward the power law $L \propto t^{-1.2}$, and the light-to-mass ratio of the disk-plus-black-hole exceeds unity for several thousand years after disruption, unless (1) the rate of disruptions is much lower than $10^{-4}\ M_{\odot}\mathrm{yr}^{-1}$, (2) most of the stellar debris is ejected or accreted without significant emission before circularization occurs, or (3) the viscosity parameter $\alpha \lesssim 0.01$. We suggest that some fraction of galaxies (particularly dwarf ellipticals) should be extremely bright at far ultraviolet wavelengths if they contain black holes of mass $10^{6\sim8} M_{\odot}$. On the other hand, our results may argue against the presence of massive black holes in nearby galaxies such as M32.

Determination of the Distance to B361 by a Modified Version of the Wolf Diagram

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Current estimates, based on the same star count analysis, of the distance to the globule Barnard 361 range from 300pc to 650pc. All the problems associated with the estimates have been fully rectified in this study and a modification has been made to the classical Wolf diagram to improve the accuracy in the distance determination. A reference field was carefully selected close to the globule but well outside the globule boundary and star counts for this field were performed on the blue POSS plate in order to set up the reference magnitude sequence appropriate to the general area of B 361. From the reference sequence the stellar density function has been derived specifically for the direction toward the globule. Correction was made for the general interstellar extinction and the luminosity function with the Wielen's dip was adopted. The resulting density function clearly reveals the existence of the local Cygnus-Orion arm in the direction of B 361 at about 700pc away from the Sun. Analysis of the star-count data for the program field locates the globule at distance 600±50pc, thus the globule is an object located in the Cygnus-Orion arm, residing somewhat toward its leading edge.