

Two Component Model of Initial Mass Function

Seung Soo Hong

Seoul National University

Weibull analyses given to the initial mass function (IMF) have shown that the mass dependence of IMF takes an $\exp[-\alpha m]$ -form in low mass range and in high mass range an $\exp[-\alpha\sqrt{m}]/\sqrt{m}$ -form with the break being at about the solar mass. Various astrophysical reasonings are given for identifying the $\exp[-\alpha m]$ -form with characteristics of halo stars and the $\exp[-\alpha\sqrt{m}]/\sqrt{m}$ -form with those of disk stars. We will discuss some implications of the two component IMF as to the evolution of our Galaxy.

Molecular and Thermal Balance in Interstellar Clouds

Kap Sung Kim

Korean National Astronomical Observatory

The molecular abundances are obtained over a wide range of densities from the chemical system involving hydrogen, carbon and oxygen, etc. The effects of varying the cloud mass and of different element abundance are studied through the calculation of equilibrium abundance.

The variety of heating and cooling mechanisms are considered, and then, the gas temperatures in molecular clouds are presented by solving simultaneously the chemical and thermal balance equations.

Dynamical Properties of Six Globular Clusters

Y. R. Suh and M. S. Chun

Yonsei University

From the structures of 6 globular clusters, various dynamical times were calculated:

- 1) Central relaxation times for these clusters are all in the range of 5×10^7 to 4×10^9 years, which are shorter than the cluster ages.
- 2) The crossing times are from 6×10^5 to 10^6 years, which are consistent with the results by King.
- 3) Using Fokker-Planck equation we calculated the central evaporation times. Except NGC 5139, 5 clusters' evaporation times lie between $\sim 10^8$ years to $\sim 10^9$ years, which are longer than the calculated relaxation times. However the evaporation time for NGC 5139 is $\sim 10^{12}$ years.
- 4) The disruption times due to possible collisions with interstellar clouds are in order of 10^{11} - 10^{12} years, which are much longer than that the life time of globular cluster.