

LOWER MASS LIMIT OF AN EVOLVING INTERSTELLAR
CLOUD AND CHEMISTRY IN AN EVOLVING OSCILLATORY CLOUD

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ABSTRACT

Simultaneous solution of equation of motion, equation of state and energy equation including heating and cooling processes for interstellar medium gives for a collapsing cloud a lower mass limit which is significantly smaller than the Jeans mass for the same initial density. The clouds with higher mass than this limiting mass collapses whereas clouds with smaller than critical mass passes through a maximum central density giving apparently similar clouds (i.e. same A_v , size and central density) at two different phases of its evolution (i.e. with different life time). Preliminary results of chemistry in such an evolving oscillatory cloud show significant difference in abundances of some of the molecules in two physically similar clouds but with different life time. The problems of depletion and short life time of evolving clouds appear to be less severe in such an oscillatory cloud.