

成果に関連して出版、もしくは印刷、投稿中の論文リスト

(1) このプロジェクト（同様の過去のプロジェクトも含む）での成果

今年度中に出版された論文、国際会議集録、国際会議、学会、研究会発表、その他出版物（印刷中、投稿中の場合はその旨を記載すること）

(2) これまでのプロジェクトの今年度中の成果

1. Chang Hyun Baek, Takahiro Kudoh and Kohji Tomisaka 'How was GW 123.4-1.5 Formed in the Galactic Disk?' in Proceedings of the Spring Meeting of Astronomical Society of Japan (2007)

項目の説明の文章などは消去して報告内容を記述しても構いません。

成果の概要

We perform three-dimensional hydrodynamic simulations of an unusual mushroom-shaped cloud, GW 123.4-1.5. GW 123.4-1.5, is hundreds of parsecs in size and apparently unrelated to conventional shells or chimney structures. In order to explain the origin and evolution of the mushroom-shaped cloud, the buoyant model and the cloud collision model were proposed and numerical simulations were executed. In this study, we extend the previous two-dimensional simulations of Kudoh and Basu (2004) to the three dimensional hydrodynamic simulations for the impact of a HVC with the Galactic disk. We perform a parameter study for the different incident velocity, density and angle of the impact cloud. Through the numerical experiments, we reproduce the mushroom-shaped cloud which resembles the observed structure in size, shape and velocity structure. The main results can be summarized as follows. 1) A mushroom shaped cloud can be formed by either high-density or low-density HVC, but the dynamical evolution and temperature and density distributions of the mushroom shaped cloud are entirely different. 2) The oblique collision with a large incident angle can't make the mushroom-shaped cloud like GW 123.4-1.5. 3) The slightly oblique collision of a cloud with the Galactic disk is a promising model of the mushroom-shaped GW 123.4-1.5.