

**Q38a**            **How was GW 123.4-1.5 formed in the Galactic disk?**

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We perform three-dimensional hydrodynamic simulations of an unusual mushroom-shaped cloud, GW 123.4-1.5. Unusual mushroom-shaped cloud, 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 & Bash (2004) to the three-dimensional hydrodynamic simulations for the impact of a High Velocity Cloud (HVC) with the Galactic disk. We perform a parameter study for the different incident velocity, angle and density of the impact cloud. Through the numerical experiments, we reproduce the mushroom-shaped cloud which resembles the observed structure in size, shape, velocity structure and the density ratio between the mushroom-shaped and surrounding gases. We conclude that the oblique collision of a cloud with the Galactic disk is a promising model of the mushroom-shaped GW 123.4-1.5.