Q37a Three-Dimensional Simulation of the Formation of Galactic Prominence in the Galactic Central Region

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We carried out three-dimensional resistive MHD simulations to study the formation mechanism of molecular loops observed by Fukui et al. (2006) at Galactic central region. We study the formation mechanism of dense cold neutral gas in rising magnetic arcades. This model is based on the in-situ formation model of solar prominences, in which prominences are formed by cooling instability in helical magnetic flux ropes formed by imposing converging and shearing motion at footpoints of the magnetic arch anchored to the solar surface. We extended this model to Galactic center scale. Numerical results indicate that dense loop-like filament is formed after magnetic reconnection takes place in the sheared arcade. The dense matter in the filament slides down along the magnetic loop. The maximum speed along the loop is the order of the free fall speed from the loop top. The position-velocity diagram obtained by simulations shows systematic variation of the line of sight along the loop and large velocity dispersions similiar to those of CO observations. The total mass of the filament exceeds 10^5 solar mass.