

[7GC-11] Gas Inflow from the Central Few Hundred Parsec to the Few Parsec Regions

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We investigate the hydrodynamics of gas clouds in the central few hundred parsecs of the Galaxy. Non-axisymmetry (elongation) of the Galactic bulge can form a reservoir of dense molecular clouds at around two hundred parsecs from the center through the X1-X2 orbit transfer, and the star formation that has been sustained for the lifetime of the galaxy can build up a nuclear bulge there. If the nuclear bulge is elongated, this again can transport the gas there down to the central few parsecs region. We perform a series of 3-D hydrodynamic simulations that consider a potential for this “nested bar”, cooling/heating, star formation and supernova feedback, and estimate the efficiency of the gas inflow down to the central parsec region.

[7GC-12] Toward a Relativistic Magnetohydrodynamic Code

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Building a relativistic magnetohydrodynamic (RMHD) codes based on upwind schemes is a challenging project, because the characteristic wave structures for RMHDs has not yet been analytically given. We obtained an analytic expression of eigenvalues and eigenvectors of the flux Jacobian matrix of RMHDs for one-dimensional, isothermal flows with two velocity and magnetic field components (that is, x and y components only), which can be used to build numerical codes. The degeneracies were taken into account. Here, we present preliminary test results with an RMHD code based on the total variation diminishing (TVD) scheme.