U054-055 **Room: Ocean B** **Time: May 16 15:00-15:15**

Second Core Formation and High Speed Jet: Resistive MHD Nested Grid Simulation

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This is the study about stellar core formation and high speed jet driven by the formed core using three-dimensional resistive MHD nested grid simulations. We assume a Bonnor-Ebert isothermal rotating cloud immersed in a uniform magnetic field. We calculate the cloud evolution from molecular cloud core (n_c = 10ˆ6 cmˆ-3, r_c = 4.6 ¥times 10ˆ4 AU) to the stellar core (n_c ¥simeq 10ˆ22 cmˆ-3, r_c ¥simeq 1 R_sun), where n_c and r_c denote the central density and radius of the objects, respectively. We resolve cloud structure over 7 orders of magnitude in spatial extent and over 16 orders of magnitude in density contrast. For comparison, we calculate two models: resistive and ideal MHD models. Both models have the same initial condition, and the former includes dissipation process of magnetic field while the latter does not. The magnetic flux in resistive model is extracted from the first core during 10ˆ12 ¥lesssim n_c ¥lesssim 10ˆ16 cmˆ-3 by Ohmic dissipation. Magnetic flux density of the formed stellar core (n ¥simeq 10ˆ20 cmˆ-3) in resistive MHD model is two orders of magnitude smaller than that in ideal MHD model. Since magnetic braking is less effective in resistive model, rapidly rotating core (stellar core) is formed. After stellar core formation, the magnetic field of the core is largely amplified both by magneto-rotational instability and the shear motion between the stellar core and ambient medium. Then, high speed jet (v ¥simeq 45 km/s) is drive by the stellar core, and a cocoon like structure around the stellar core is formed. As a result, strong mass ejection occurs, and bow shocks are appears.