Q04a Investigation of the effect of magnetic diffusion on the Fermi Bubbles by 3D MHD simulation

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The Fermi Bubbles (FB) are two giant gamma-ray structures extending to ~ 50 ° in the Galactic latitude, above and below the Galactic center (GC), w ith a width of ~ 40 ° in the Galactic longitude. They are spatially cor related with the 23 GHz microwave emission measured by WMAP & Planck satell ite, share edges with X-rays emission at 1.5 keV measured by the ROSAT teles cope, and are also associated with two giant radio polarized lobes 2.3 GHz d iscovered by S-PASS survey. To investigate the FB, we developed a 3D MHD simulation code, implementing CRs dynamically coupled with the Dark Matter (DM) halo gas and the Galactic magnetic field. The MHD equations are solved using a 2nd order in space based on MUSCL reconstruction & HLL Rieman solvers scheme, and a 2nd order Runke kutta time integration.The divergence free condition is ensure with the divergence cleaning method. The magnetic field has been defined with a large scale component and a small scale component (random tangled field). The Cr advection source term is updated explicitly and the CRs anisotropic diffusion source term is updated using the centered asymmetric difference scheme. As initial condition, the gaseous halo is in hydrostatic equilibrium in a fixed Galactic potential, and we add some CRs event (jet or wind) at the GC. Radiative source term will be implemented soon in our MHD equations.We will then investigate the effect of the magnetic diffusion on the multi-wavelengths features of the FB.