

Q16a **Radio Filaments Formed by Parker Instability in Galactic Center Region**

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We performed two dimensional numerical simulations of Parker instability taking into account the cooling and heating functions of the interstellar medium (Inoue et al. 2006). Our numerical experiment is based on the simulation code in which the HLLD Riemann solver (Miyoshi and Kusano 2005) is used to solve the MHD equations. We found that when magnetic pressure exceeds the gas pressure, long (larger than 100 pc) dense spurs are formed at the valley of magnetic field lines by Parker instability. Shock compression of the spurs formed by Parker instability triggers the cooling instability, which form, dense (n is about 100 per cubic cm) thin, vertical filaments. Such shock wave are formed at the sides of the filaments, electrons can be accelerated and form synchrotron emitting non-thermal filaments. By assuming the distribution of high energy electrons around the shock fronts, we computed the distribution of synchrotron radiation. This mechanism can explain the non-thermal radio filaments observed in Galactic Center region.