

P24b 分子雲のフィラメント構造に宇宙線が及ぼす効果

桑原 匠史 (千葉大理)、 Chung-Ming Ko (NCU Taiwan)

We present the results of linear analysis for Parker-Jeans instability in magnetized gas disks (galactic disks) including the effect of cosmic-ray (CR) diffusion along magnetic field lines. We adopted an uniformly rotating two-temperature layered disk with horizontal magnetic fields as an unperturbed state and solved the perturbed equations numerically. Fragmentation of gases takes place and filamentary structures are formed by the growth of instability. The direction of the longitudinal axis of filaments is perpendicular/parallel to the magnetic field lines when κ_{\parallel} is larger/smaller than $3 \times 10^{26} \text{ cm}^2 \text{ s}^{-1}$, where κ_{\parallel} is the diffusion coefficient of CR along magnetic field lines. Nagai et al. 1998 showed that the direction of filaments formed by Parker-Jeans instability depends on the pressure strength outside the unperturbed gas disk. Our results shows other possible factors governing the direction of the filaments with respect to the magnetic field lines.