fields parallel to the disk, and gravitational fields originated from a point mass is more unstable to the antisymmetric (odd mode) pertyrbation with respect to the midplane of the disk than the symmetric (even mode) one (Horiuchi et al. 1988). By applying symmetric and antisymmetric perturbations with unstable pairs of horizontal and vertical wavelengths to the initial states, we obtained the final equilibrium states of the Parker instability in the system.

Comparing the final equilibrium states with and odd modes, we found that i)the column density of the odd mode is greater than that of the even mode at the position of magnetic field "valleys", ii)the total magnetic and total gravitational energy of the odd mode are smaller than those of the even mode. For the case of the odd mode, the ratio of magnetic pressure to gas pressure at the position of valleys is less than 0.1 and the direction of the magnetic fields is nearly vertical to the disk. This result demonstrates that Parker instability can generate weak vertical magnetic fields at the position of valleys which are indispensible to the magnetorotational instability(balbus & Hawley 1991).

A Survey of ^{30}SiO Emission From Evolved Stsrs

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We present the first detection of ^{30}SiO v=1, J=1-0 maser emssion toward the Mira variable star TX Cam among 18 surveyd evolved stars. The line width and intensity of this maser were much narrower and weaker than those of ^{30}SiO v=0, J=1-0, providing the fact that it is unsaturated. The result also implies the fact we can not directly adopt the line overlap mechanism for the ^{30}SiO masrs of TX Cam without testing the normal inersion mechanism. The ^{30}SiO v=0, J=1-0 and ^{30}SiO v=0, J=2-1 emission lines have been also newly detected in 6 evolved stars: TX Cam, R Cas, χ Cyg, W Hya, U Lyn, and WX Psc. They show a different masing status of ^{30}SiO depending both each source and transition, probably related to a critical masing condition.

On the Polarization of Resonantly Scattered Lines in the Quasar Broad Absortion Line Troughs

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The contribution to the expected linear polarization in the quasar broad absorption line troughs from resonance scattering is computed using a Monte Carlo approach