

Laboratory modeling of nonstationary processes in space cyclotron masers

A. Vodop'yanov, **S. Golubev**, A. Demekhov, V. Zorin, D. Mansfel'd, S. Razin and V. Trakhtengerts

Institute of Applied Physics, Russian Academy of Sciences (gol@appl.sci-nnov.ru)

Results are presented from laboratory modeling of the dynamics of space cyclotron masers. Quasi-periodical bursts of electromagnetic radiation accompanied by the precipitation of energetic electrons from the non-equilibrium plasma of an ECR discharge in a mirror magnetic trap have been registered. The study of the microwave plasma emission and the energetic electrons precipitated from the trap shows that the precipitation is related to the excitation of whistlers propagating nearly parallel to the trap axis. The observed instability has much in common with phenomena in space magnetic traps, such as radiation belts of magnetized planets and solar coronal loops. The experimental results demonstrate the opportunity of laboratory modeling of space cyclotron masers. Prospects of such modeling are discussed.