

# Review of spatial distribution modes in a 2.45-GHz hydrogen plasma

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## Abstract-

A comprehensive review of plasma distributions modes found by us in a 2.45-GHz hydrogen ECR discharge is presented for the first time. Regular and ultrafast photographs show very interesting spatial plasma shape modes never observed before for this kind of plasmas. The resonance of the discharge chamber is kept by using an optical transparent but microwave shielded quartz window with two tungsten meshes, one on each side. The experiments reveal a strong dependence of the plasma distributions on the magnetic field where the plasma is embedded. Most distributions are steady but two of them show a rotational behavior connected with  $E \times B$  drift.

**Index Terms-**  $E \times B$ , ECR plasma source, hydrogen, ion source, rotational plasmas, ultrafast photography.

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