MICROFIELD DISTRIBUTION FUNCTION IN STRONGLY MAGNETIZED PLASMAS

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In a dense plasma, the study of spectral lines requires an understanding of the physical properties of the system. Two types of particles interact with an emitter: electrons (light and fast) and ions (quasi-static). Electrons are generally described by the theory of impacts of collisions. Ions, considered quasi-static, create a uniform electric microfield around the emitter. This ionic microfield results from the thermal fluctuations of ion positions and plays an important role in the broadening of spectral lines. The effect of the microfield is incorporated into the expression of the line profile through the distribution of the electric field. Plasmas subjected to a magnetic field (weak or strong) have energy level modifications (lifting of degeneracy, shifts). It is essential to know the statistical distribution $P(E)$ of the field to analyse these effects. This knowledge helps in better understanding the spectral modifications in dense plasmas under a magnetic field.

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