

## **P5.4001 Transformation and radiation processes in turbulent plasma in the presence of convective cells**

*Friday, 12 July 2019 14:00 (2 hours)*

See full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/P5.4001.pdf>

The process of plasma radiation is studied when the transformation of an longitudinal Langmuir wave into the transverse electromagnetic wave occurs. The transformation takes place on turbulent plasma fluctuations in the presence of upper hybrid pump wave parametric instability. We consider the parametric decay of such wave into the daughter upper hybrid wave and modified convective cells. It is shown that the main contribution to the correlator of electron density which defines the value of transformation coefficient is given by low-frequency plasma oscillations (convective cells).

Notice must be taken that convective modes arise in magnetized plasma with a small ratio of the plasma pressure to the magnetic pressure, and can occur in the ionospheric plasma.

The transformation coefficient is calculated. We demonstrate the dominant role of the pump wave term which is essentially depend on the pump wave amplitude and frequency. For typical ionospheric plasma parameters in the F layer at about 250 km, we show that the pump wave term can exceed by several orders of magnitude the analogous one for the case of stable plasma ( the parametric instability is absent ) when the level of plasma density fluctuations is determined by the thermal noise.

The intensity of transverse waves radiation from turbulent plasma is calculated and its dependence on convective cells frequency and damping rate is obtained.

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