

**R006-16**

**A 会場 : 9/25 PM2 (15:45-18:15)**

**18:00~18:15**

## プラズマ粒子シミュレーションのためのロスコーン分布の乱数生成法

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### **Loading loss-cone distributions in particle simulations**

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The loss-cone distribution is one of the most characteristic velocity distributions in space plasmas, in particular in the inner magnetosphere. Many scientists study wave-particle interaction and other issues by means of kinetic simulations in a loss-cone distributed plasma, such as the subtracted Maxwellian, the Dory-type loss-cone (DGH in short) distribution, and the kappa loss-cone (KLC) distributions. This presentation will provide numerical recipes to initialize loss-cone type velocity distributions.

First, we propose rejection algorithms to initialize the subtracted Maxwellian. Depending on the shape parameter beta, one can select an appropriate envelope distributions to efficiently generate the distribution. Second, we propose a simple algorithm to initialize the DGH distribution. Third, inspired by algorithms for the student's t-distribution and for the DGH distribution, we construct a novel algorithm to initialize a Summers-type KLC distribution.

All these distributions have a hole rather than a loss cone near the velocity center, because the density cavity is modeled by the perpendicular velocity. To better express the loss cone, we propose to use a pitch angle instead. To this end, we propose a transform algorithm that converts a spherically-symmetric distribution into a loss-cone distribution. This allows us to generate a loss-cone and KLC distributions from the Maxwell and kappa distributions straightforwardly.