

# Plasma simulation through a PIC conservative new method

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## Abstract

The plasma confinement in a mirror magnetic trap can to produce important electrical currents [1, 2]. The experimental study described in [3] found that the electron ring is generated effectively when the electron cyclotron resonance magnetic surface within the trap cavity  $B_0(r, z) = mc\omega/e$  ( $m$ ,  $e$  - electron mass and charge,  $\omega$  - microwave frequency) has a one-sheet hyperboloid shape. Therefore the ring self-generated magnetic field could be considerable, in a previous numerical experiment [4] get showed electronic ring formation mechanism, using PIC method and electrostatic approximation. In order to study the effect of self generated magnetic field through electromagnetic conservative PIC method, is necessary to seek a form that reduce the computational time, for this a new scheme of density current waiting is proposed which could be named "*mix density currents waiting*". This technique is fast and easy to program which is tested on a plasma in a mirror trap heated for microwaves in a cylindrical resonator cavity. Although algorithm is running yet, the first results show acceptable behavior.

## References

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