



UMass Lowell Computer Science Colloquium Announcement

Speaker: Dr. Jiannan Tu, Center for Atmospheric Research, UML
Date & Time: Wednesday, February 28, 2007, 3:00pm-4:00pm
Place: Olsen 311 (Refreshments are served at 2:40pm)

A PIC Code for Studying Antenna-Plasma Interaction in Space Plasma

We developed a particle-in-cell (PIC) simulation model to investigate the interaction between a high-voltage driven antenna and plasma in wave transmission. We consider an electrically short dipole antenna placed in space plasma. The antenna considered is a bare antenna that is assumed to be perfectly conducting. In the present version of the simulation code, time-dependent electric field is solved through Gauss's law and electrons are advanced through equations of motion. We discuss the algorithms used in calculating the charge and the electric fields on the spatial grids, and in advancing the velocities and positions of the electrons. The simulation reproduces theoretical predictions and reveals detail physical processes of the antenna-plasma interaction.

Bio:

Jiannan Tu received a BEng degree in EE from Zhejiang University, Hangzhou, China in 1984, and a MEng degree from University of Electronic Science and Technology, Chengdu China in 1987. He obtained his PhD in physics at University of Alabama in Huntsville (UAH) in 2004. Before he enrolled in UAH in 2000, he had worked as an associate professor at Wuhan University, Wuhan, China. He also worked as an associate research scientist in Kanazawa University of Japan, and Institute of Astronautical and Space Science of Japan. At the present, he is a research associate at the Center for Atmospheric Research, University of Massachusetts Lowell.

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