

Contracts Final Presentation 19-20 Feb. 2004

1. Title of the presentation

SPIS, a new approach for spacecraft-plasma interaction modelling

2. Speaker

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3. Abstract

The Spacecraft Plasma Interaction System, SPIS, is a simulation software based on an electrostatic 3D unstructured Particle-In-Cell plasma model and consisting of a AVA based highly modular Object Oriented library, called SPIS/NUM. More accurate, adaptable and extensible than the existing simulation codes, SPIS is designed to be used for a broad range of industrial and scientific applications. The simulation kernel is integrated into a complete modular pre-processing/computation/ post-processing framework, called SPIS/UI, allowing a high degree of integration of external tools, such as CAD, meshers and visualization libraries (VTK), and a very easy and flexible access to each level of the numerical modules via the Jython script language. Developed in an Open Source approach and oriented toward a future community based development, SPIS is already partially available for the whole community (<http://www.spis.org>) and in used by members of the European SPINE network (<http://www.spis.org/spine>). SPIS should address a large majority of the new challenges in spacecraft-plasma interactions, including the environment of electric thruster systems, solar arrays plasma interactions, and accurate calibration of scientific plasma instruments.