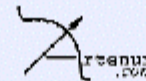


# **SPIS Numerical core**

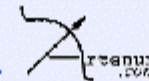
(or SPIS/NUM, or "the solvers")

**J.-F. Roussel, F Rogier, D Volpert**    *ONERA*



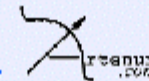
# NUM presentations

- The parameters
- Interaction modelling
- Some examples of results
- Extensions still under work: Poisson solver for 1D object, wires
- Conclusions – perspectives – future (NUM + a bit of UI)



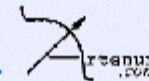
# Still to be developed by ONERA

- Poisson solver handling singularities due to (1D and) 2D objects
- Interactions:
  - Improved induced conductivity
  - A few others (proton impact SEE, surface conduct.)
- SC electric circuit:
  - Take into account groups => electric component inbetween (biasing, resistor...)
  - Maybe implicit solver ( $C_{sat} \ll C_{coating}$ )
- Particle source on the spacecraft
- Particle trajectories monitoring
- A bit more documentation (a lot is in the API Doc/DocSpisNum/API)



# Test plan (NUM + UI indeed)

- Discussion of the test plan logics here:
  - Contractor: functional tests:
    - Sets of conditions:
      - UI: series of commands, such and such plots (post-processing)...
      - NUM: sets of flags/parameters: with/without photo-emission, such and such environment...
    - Compliance criterion: no crash, reasonable results, quantitative when possible...
  - SPINE members: quantitative tests for physical validation
    - Comparison with analytical data (LP models discussed in WG1....)
    - Comparison with flight data (difficulty of experimental & environment uncertainties)
  - Setting up a list of non-regression test cases
    - A sub set
    - Representative
    - Some functional, some quantitative
- To be defined iteratively in interaction the community within the next few months



# The next future

- Importance of SPINE community (again and again) !
- Testing and appropriation of SPIS
- Hopefully some developments, at least:
  - Localised, e.g. a source model
  - Or at high level, e.g. play with the time integration loop  
(see `SimulationFromUIParams` and modify it)

NB: The forum starts to be living (<http://www.spis.org/...>)

