Electron Cloud Mitigation
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"RF breakdown: Present status and where are we heading"

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Objectives of this presentation

- Problem areas
- New findings in the parameters affecting the Multipactor breakdown
- New lines of investigation at ESA or funded by ESA
- Prediction software and testing techniques
- ECSS
- Corona

Multipactor Breakdown consequences

- Noise that effects receive band sensitivity and quality of the transmitted data.
- Harmonic generation
- RF power reflected. Damage on amplifiers.
- Local heat → out-gassing → Corona → lost of the space mission

Space constrains

- More data or channels → more power → breakdown
- Size reduction. Gaps !
- Conductive materials and “RF friendly” geometries
- No possibility to use “heavy” solutions
- Astronauts not willing to EVA at 36000 km to find out the reason for the failure and fix it →No possibility to correct errors

Content

Multipactor in transmission lines

- Multipactor and SEY
- Multipactor and other surface properties
- Multipactor and internal research at ESA
- Simulation and prediction
- Future work
- Harmonization and standardization

Multipactor: Types of transmission lines

- Waveguide structures
- Coaxial lines
- Microstrip lines