

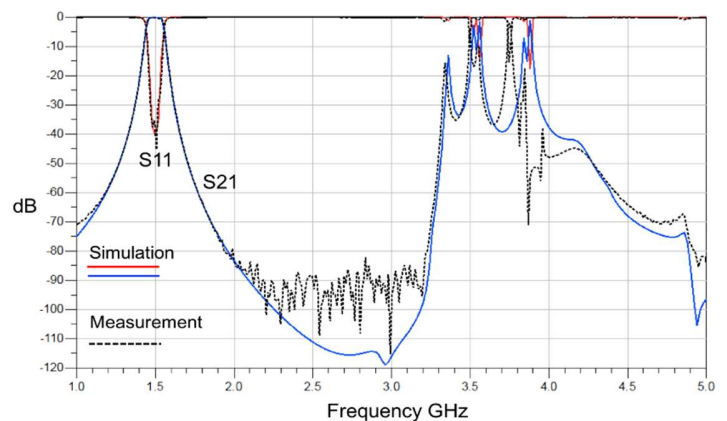
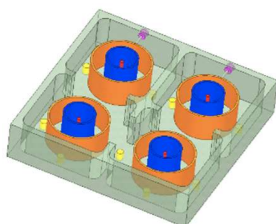
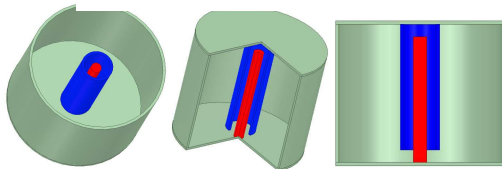
Synthèse d'activité – Pôle MatRF

Filtrage RF volumique de puissance

- Développement de solutions de filtrage volumique fort Q (qq K), et de dispositifs passifs RF pour des applications spatiales avec de fortes contraintes en puissance (**multipactor**).
- ✓ Activités supportées principalement par le CNES, l'ONERA et la DGA en collaboration avec Thales Alenia Space
- ✓ Collaborations internationales : NTU Singapore (Protection carbone), ANU Canberra Australia (Système de détection d'avalanche), RMIT Melbourne Australia (Dépôt carbone FCVA)
- ✓ Problématique de la tenue en puissance considérée comme prioritaire pour le CNES et l'ESA
- ✓ Adresser des problématiques de tenue puissance à terre (**Corona**)



Narrowband filters



Production scientifique la plus marquante sur le sujet depuis 2022

- ✓ J. Benedicto, E. Rius, J-F. Favennec, D. Pacaud, L. Carpentier, J. Puech, « A Compact L-band Bandpass Filter Based on SIR Coaxial Resonators with High Multipactor Threshold », ***International Journal of Microwave and Wireless Technologies***, Special Issue on "Filters and Multiplexers for Satellite Communications Systems", 1-12, Février **2022**.
- ✓ J. Benedicto, H. Aouidad, E. Rius, J. F. Favennec, A. Martin-Guennou, A. Manchec, « Analytical Modelling of Three-Section Coaxial Stepped Impedance Resonators for the Design of Compact Tx Bandpass Filters », ***IEEE Transactions on Microwave Theory and Technique***, Volume: 70, Issue: 9, September **2022**.
- ✓ J. Benedicto, J. F. Favennec, A. Buitrago Bernal, E. Rius, « Modelization Methodology for the Quality Factor of Quarter-Wavelength n-Section Coaxial Stepped Impedance Resonators », ***IEEE Journal of Microwaves***, Volume: 2, Issue: 4, October **2022**.
- ✓ A. Buitrago Bernal, J. Benedicto, , J. F. Favennec, E. Rius, « Quarter-Wavelength Two-Section Coaxial Stepped Impedance Resonators with Parallel Central Sections for Constraint Reduction in Compact Tx Bandpass Filters », ***IEEE Transactions on Components, Packaging and Manufacturing Technology***, **2023**.
- ✓ J. Benedicto, E. Rius, A. Bonizec, J. -F. Favennec, A. B. Bernal and A. Martin-Guennou, "Quarter-Wavelength and Open-End Half-Wavelength Four-Section Coaxial Stepped Impedance Resonators for High-Power Space Bandpass Filters," ***IEEE Transactions on Microwave Theory and Techniques***, **2023**.
- ✓ J. Benedicto, E. Rius, A. Bonizec, J. F. Favennec, A. Buitrago Bernal, A. Martin-Guennou, "Quarter-Wavelength and Open-End Half-Wavelength Four-Section Coaxial Stepped Impedance Resonators for High-Power Space Bandpass Filters".. ***IEEE Transactions on Microwave Theory and Technique*** Volume: 72, Issue: 7, July **2024**
- ✓ A. Bonizec, J. Benedicto, J. F. Favennec, E. Rius, C. Goujon., "Quarter-Wavelength Two-Section Coaxial Stepped Impedance Resonators for Harmonics Suppression in Tx Bandpass Filters". ***IEEE Access***, Volume 13, Issue 1, January **2025**, p. 9391 –9398.
- ✓ A. Buitrago Bernal, J. Benedicto, J. F. Favennec, Y. Yang, E. Rius, "Quarter-Wavelength Coaxial Stepped Impedance Resonators with Inverted Geometry for High Power Space Bandpass Filters", ***IEEE Microwave and Wireless Technology Letters***. August **2025**
- A. Buitrago Bernal, J. Benedicto, J. F. Favennec, L. Roy, E. Rius, "Tx Coaxial Stepped Impedance Resonator Filters With Distinct Transmission Zeros", ***IEEE Microwave and Wireless Technology Letters***. February **2026**