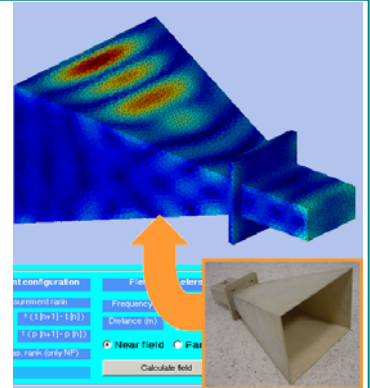




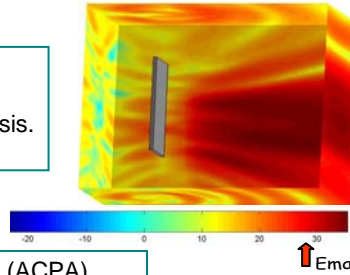
ADVANCED ANTENNA MEASUREMENT TECHNIQUES

- ▶ Electromagnetic source reconstruction techniques.
- ▶ Near Field to Far Field techniques- arbitrary acquisition.
- ▶ Probe correction techniques.
- ▶ 2D and 3D current reconstruction for antenna diagnosis.
- ▶ Inverse problems in radiation.
- ▶ Near Field characterization of antennas applied to human exposure to EM fields.
- ▶ Echo cancellation with signal processing techniques.



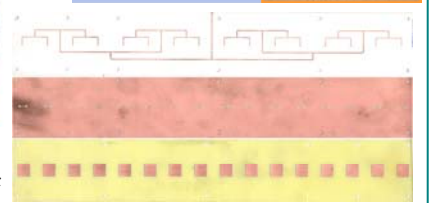
ANTENNA PATTERN SYNTHESIS

- ▶ Integral equation reconstruction techniques.
- ▶ Artificial Neural Network synthesis.
- ▶ Synthesis in coupling conditions: in port voltage synthesis.
- ▶ Synthesis in the presence of obstacles.



ANALYSIS, DESIGN AND CONSTRUCTION OF PRINTED ACTIVE ANTENNAS

- ▶ Analysis, Design and Construction of Printed Antennas (ACPA).
- ▶ Full wave (MoM) analysis of directive multilayer patch array ant.
- ▶ Milling fabrication of planar array antennas.
- ▶ Active device design and construction for smart scanning antennas.
- ▶ Design tools for analyzing non linear devices.
- ▶ Characterization, design and prototyping of self oscillating mixers.



COMPUTATIONAL ELECTROMAGNETICS

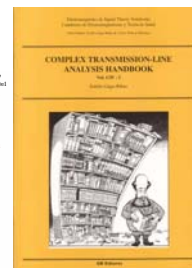
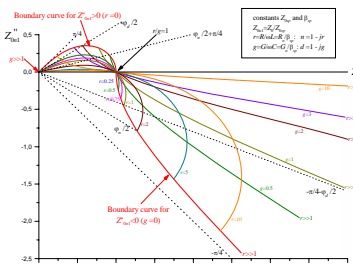
- ▶ Integral equation-MoM techniques for PEC+dielectric with 2D and 3D geometries, quasi-static and full-wave.
- ▶ Radiation and scattering of resonant structures.
- ▶ Accelerating techniques, FMM.
- ▶ Scattering of sea surfaces, RCS of sea targets, high resolution images of sea targets

RADIO COVERAGE PREDICTION AND CHANNEL CHARACTERIZATION

- ▶ Software Tools Outdoor and Indoor Propagation
- ▶ HF techniques, MoM techniques, ANN, SVM, ...
- ▶ Geometric and accelerating processing techniques
- ▶ Indoor radiochannel characterization, narrow band and broadband, for different bands and propagation scenarios.
- ▶ MIMO and polarization diversity schemes for indoor propagation.
- ▶ Temporal variations of the radio channel, indoor and outdoor.

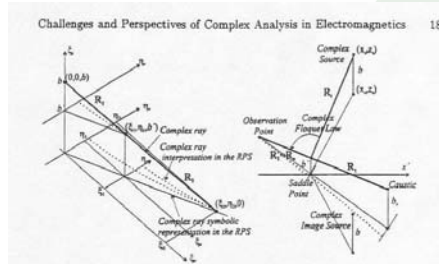
COMPLEX ANALYSIS

- ▶ Complex analysis applied to electromagnetic field analysis of radiating and scattering electromagnetic problems.
- ▶ Signal theory in real and complex variable.
- ▶ Green's functions theory in real and complex spaces.
- ▶ Complex transformations and wave theory.



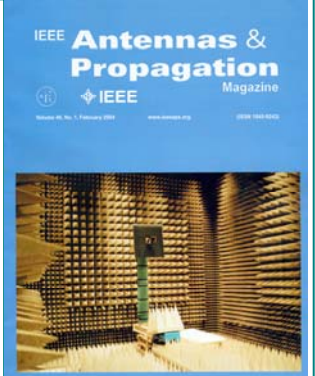
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MEASUREMENT FACILITIES

- ▶ “Near Field Spherical Range on Anechoic Chamber” (8m x 5m x 4.5m)
- ▶ Standard gain antennas and rotatory joint up to 40 GHz
- ▶ 65 GHz Network Vector Analyzer.
- ▶ Near-field/Far Field transformation software (spherical modes and source reconstruction)



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