A proposal for the ‘RF Physics and Technology’ topic

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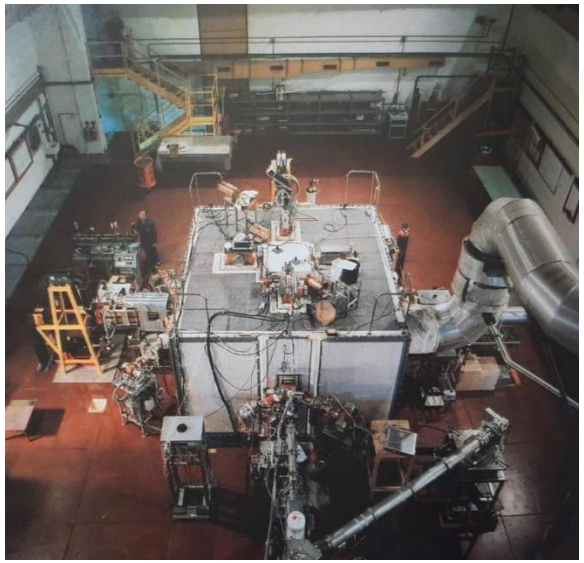
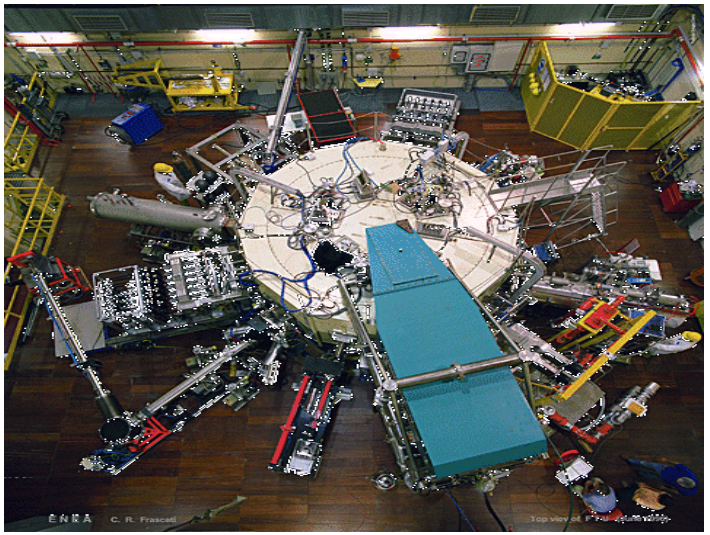
Tokamak in Frascati

- FT machine (construction: 1972-1977; operation: 1978-1989), a second generation compact tokamak with a circular poloidal cross section (major radius R0 = 0.83 m, minor radius a = 0.23 m), a metallic first wall, high plasma current (0.6 MA) and high magnetic field (10 T).



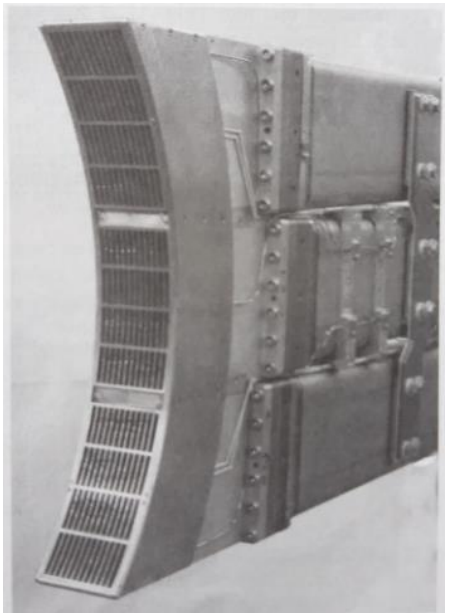
- FTU machine (design & construction: 1982-1989, operation: 1990-2019), a medium-size tokamak with a circular poloidal cross section (major radius R0 = 0.935 m, minor radius a = 0.30 m), a metallic first wall, high plasma current (1.6 MA) and high magnetic field (8 T).



LH heating and current drive in Frascati

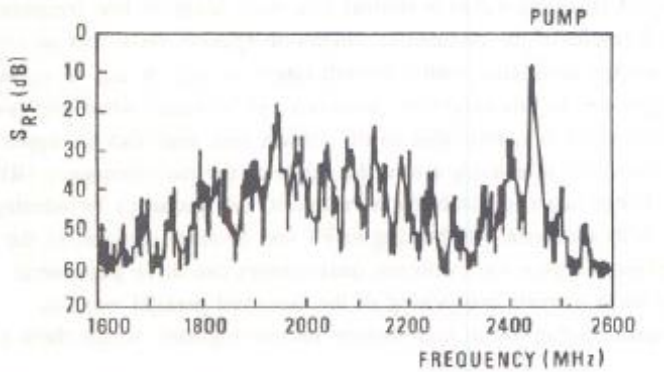
- RF power in LH frequency range in FT:
  - 2.45 GHz (0.5 MW), 2x2 waveguide grill (till July 1985), 2x4 grill (after July 1985);
  - 8.00 GHz (0.5 MW), 4x4 waveguide grill (1987-1989);

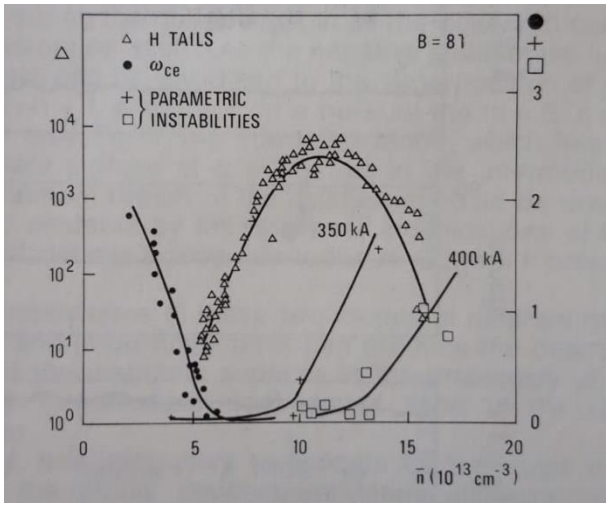
- RF power in LH frequency range in FTU:
  - 8.00 GHz (6 MW), two equatorial launching structures each composed of three grills, each composed by 48 waveguides (12colx4rows) and connected to a single gyrotron (1 MW).

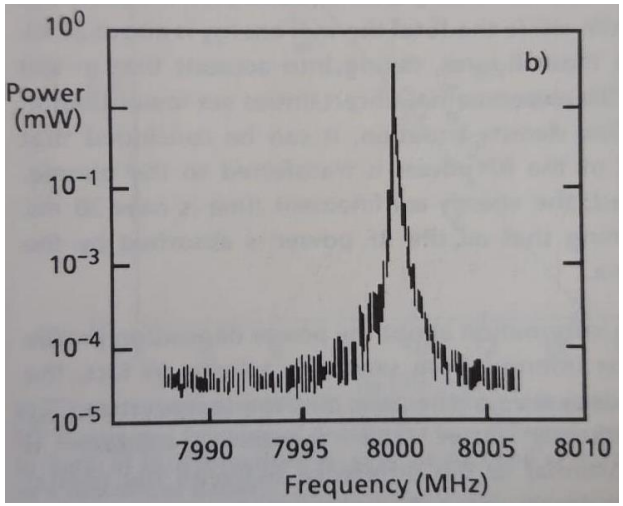


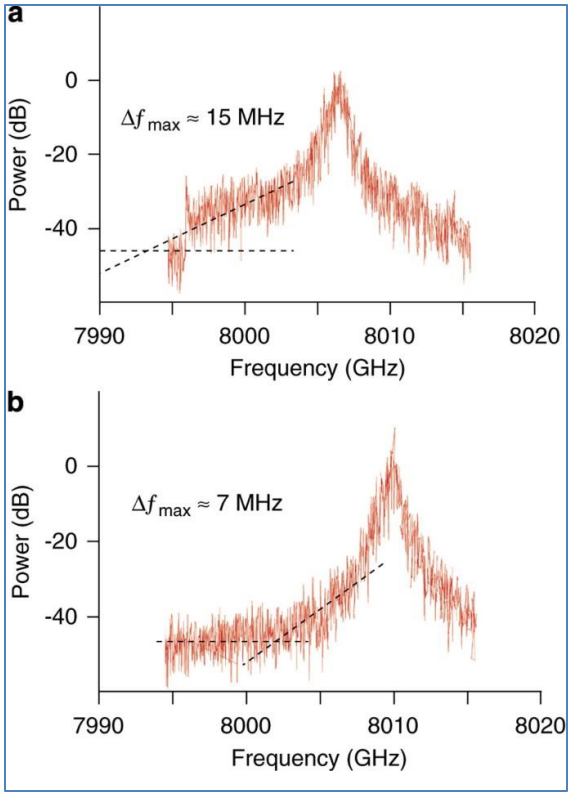
Focus on PDI and Density Limit for LHCD

- Density limit for LH was very well characterized in FT and also studied in FTU;
- PDI studies were performed in FT and FTU;
- New PDI modeling has been developed in FTU;
- An experimental receipt for high density LHCD has been developed in FTU (Cesario, Nature 2010);
- What lessons can be learned for DTT?









Thank You