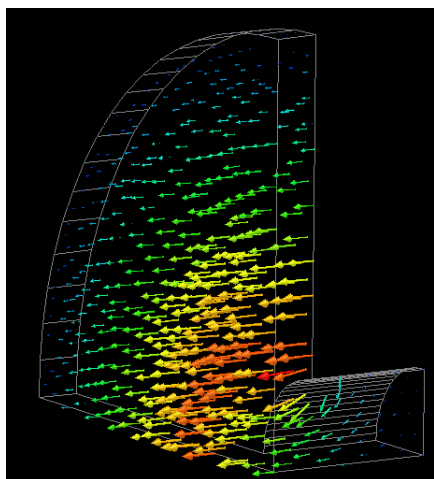


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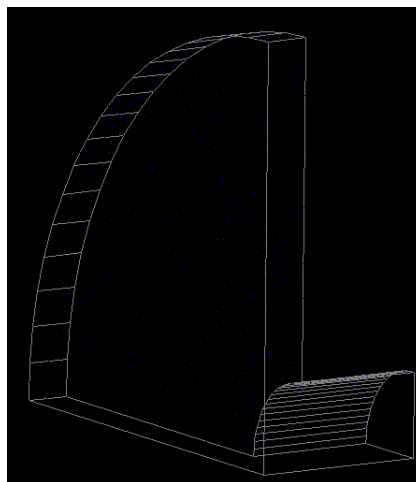
Pillbox: TM010

a cavity radius



$$E_z = E_0 J_0 \left(\frac{\chi_{01}}{a} \rho \right)$$

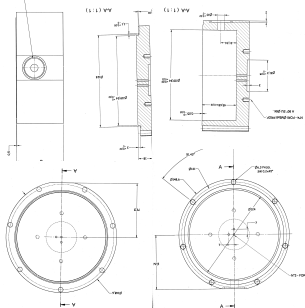
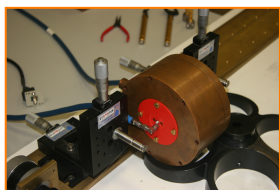
L cavity length



$$Z_0 H_\phi = j E_0 J_1 \left(\frac{\chi_{01}}{a} \rho \right)$$

Caratteristiche elettromagnetiche pillbox stimate con HFSS

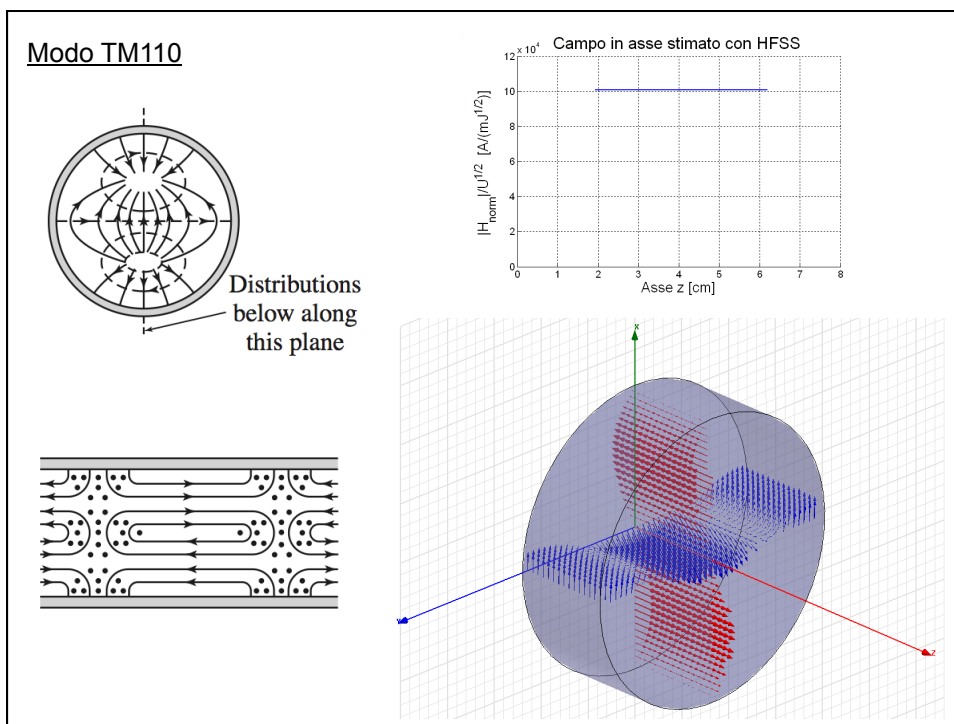
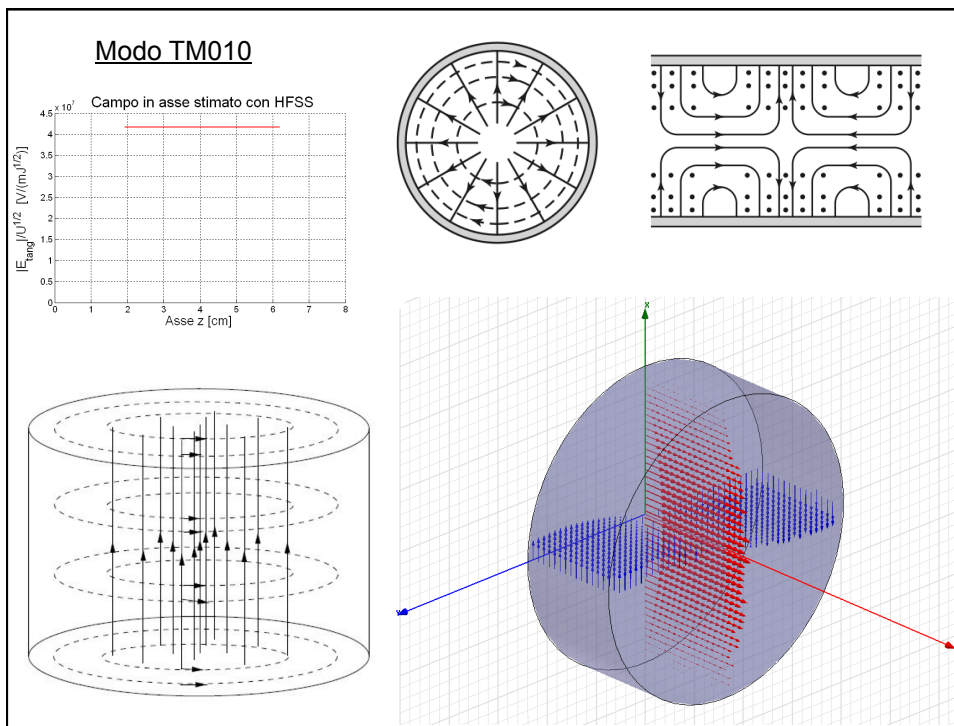
Foto pillbox

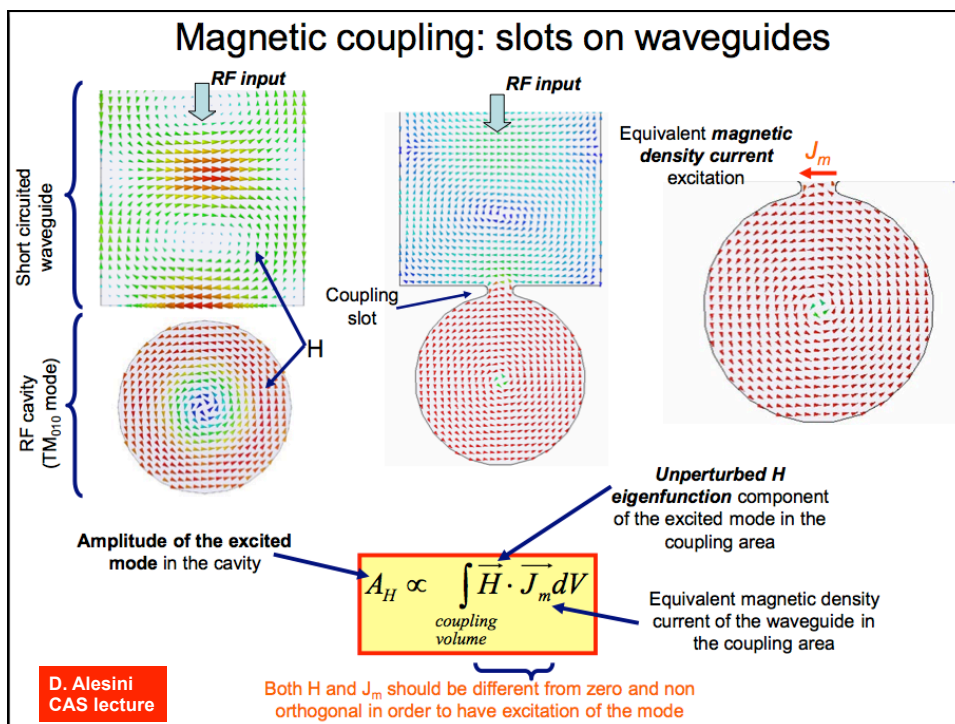
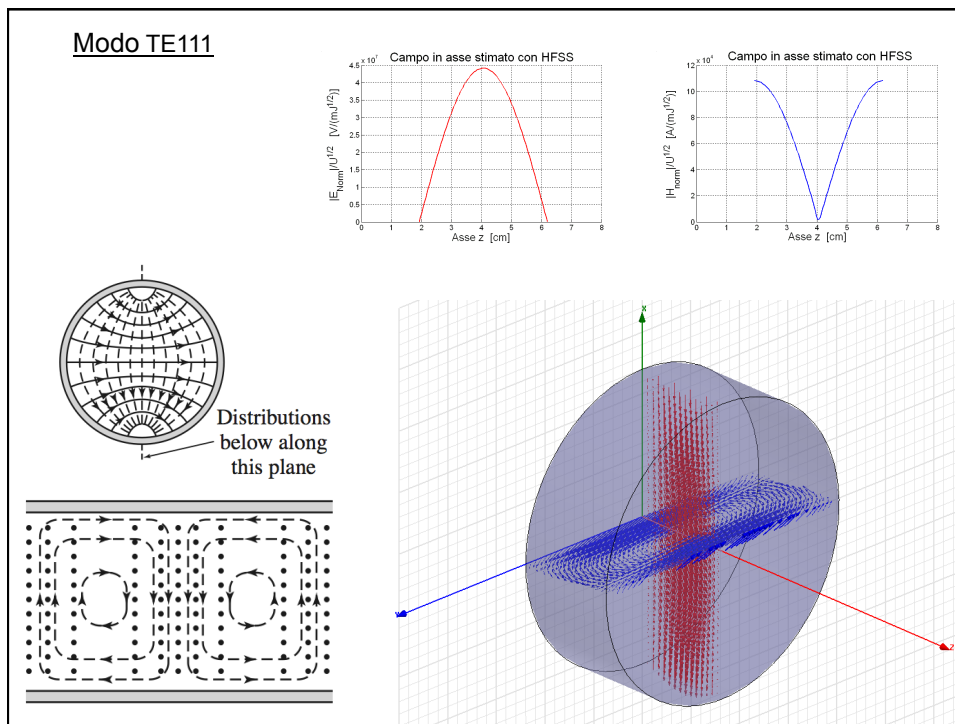


Risultati numerici

Modo in cavità	F res [GHz]	E/(U ^{1/2}) [V/(mJ ^{1/2})]	H/(U ^{1/2}) [A/(mJ ^{1/2})]
TM010	1.9133	Tang:4.1681e+07	/
TM110 (0)	3.0486	/	Norm:1.0085e+05
TM110 (90)	3.0486	/	Norm:1.0083e+05
TE111 (0)	3.8036	Norm:4.4153e+07	Norm:1.0836e+05
TE111 (90)	3.8037	Norm:4.4191e+07	Norm:1.0836e+05
TM011	3.9962	Tang:2.8208e+07	/
*TM210 (0)	4.086	/	/
*TM210 (90)	4.086	/	/
*TE211 (0)	4.2672	/	/
*TE211 (90)	4.2676	/	/

* I modi evidenziati hanno uno zero di campo sull'asse della cavità.





Magnetic coupling: longitudinal slots on waveguides

Magnetic coupling: loop

$$A_H \propto \int_{\text{coupling volume}} \vec{H} \cdot \vec{J}_m dV$$

The excitation of the mode can be varied changing the orientation of the loop

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Electric coupling: antenna

$$A_E \propto \int_{\text{coupling volume}} \vec{E} \cdot \vec{J} dV$$

Amplitude of the excited mode in the cavity

Unperturbed E eigenfunction component of the excited mode in the coupling area

Equivalent electric density current of the waveguide in the coupling area

Both E and J should be different from zero and non-orthogonal in order to have excitation of the mode

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