RESISTIVE-WALL IMPEDANCE WITH INDUCTIVE-BYPASS FOR THE LHC COLLIMATORS

E. Metral

- **What have we used until now : the thin or thick wall approximation ?**
- **What should have we used ?**

What have we used until now : the thin or thick wall approximation?

⇒ **We have used the thick wall approximation for all the frequencies**

What should have we used ?

- The first (possible) unstable betatron line is at

$$f_\beta = -7646.94 \text{ Hz}$$

- Graphite collimator data (from R. Assmann, email 5/02/2004)
  - Jaw dimensions $25 \times 80 \times 1200 \text{ mm}^3$ $\Rightarrow$ Thickness = 2.5 cm
  - Resistivity $\rho = 14 \ \mu\Omega\,\text{m}$

- The skin depth at the first (possible) unstable betatron frequency is

$$\delta\left(f_\beta\right) = \sqrt{\frac{\rho}{\mu_0 \pi f_\beta}} = 2.15 \text{ cm}$$

$\Rightarrow$ OK !