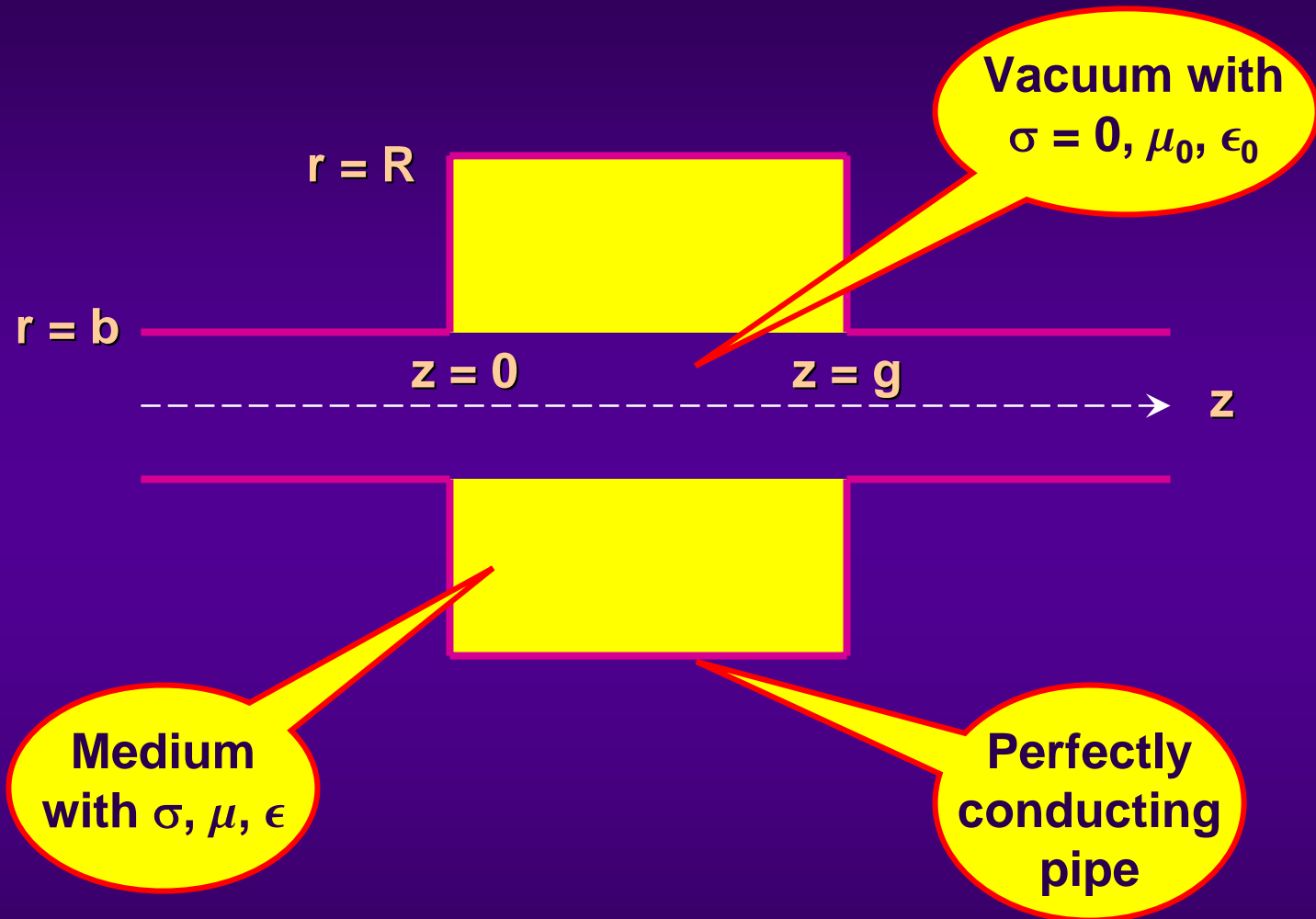


TRANSVERSE RESISTIVE-WALL IMPEDANCE OF A RESISTIVE TUBE WITH FINITE LENGTH

Elias Métral

- ◆ Complete theory done by R.L. Gluckstern and B. Zotter
- ◆ I tried to write a Mathematica program based on their draft paper of August 9, 2006
 - ⇒ Solve a system of $2N + 1$ linear equations with $2N + 1$ unknowns, where N = order of truncation of the matrices

GEOMETRY OF THE PROBLEM

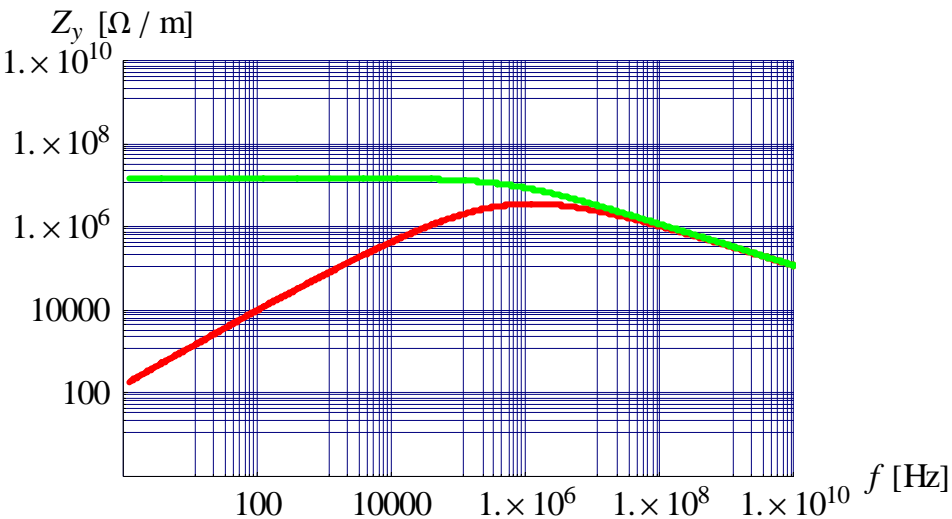


FIRST (VERY PRELIMINARY!) RESULTS...

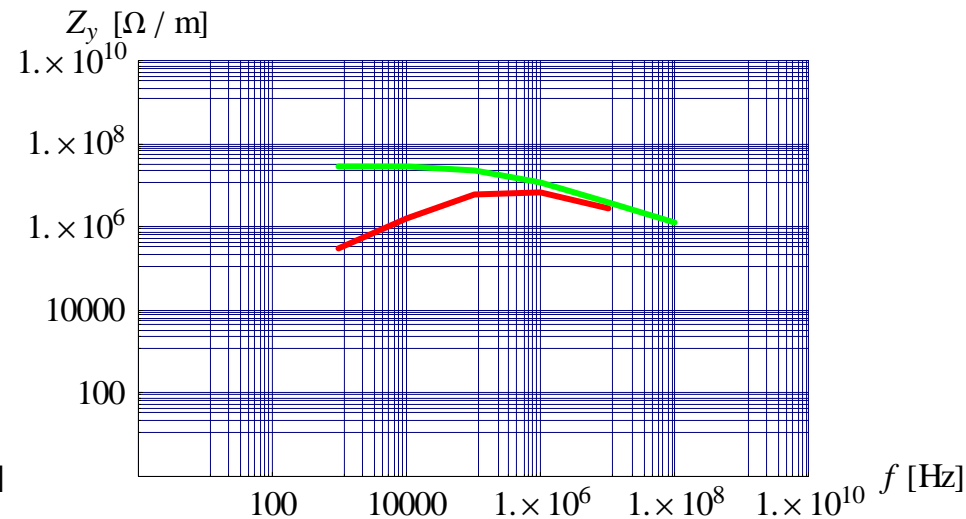
◆ Application to the case of a LHC collimator

- Length = $g = 1$ m
- Half gap = $b = 2$ mm
- Resistivity = $10 \mu\Omega\text{m}$
- Wall thickness = $R = 2.5$ cm

INFINITE LENGTH COMPUTATION



FINITE LENGTH COMPUTATION (with $N = 10$)



CONCLUSION AND FUTURE WORK (with Benoit Salvant)

- ◆ **This first estimate is not too far from the computation assuming an infinite length (same shape and same order of magnitude) \Rightarrow Theory and numerical application do not seem to be completely wrong...**
- ◆ **The next steps will be to**
 - **Check this (very preliminary) result, changing N...**
 - **Understand the limitations at low and high frequencies**
 - **Scan in the length g of the resistive tube**
 - **...**