

TRANSVERSE RESISTIVE-WALL IMPEDANCE FOR FERRITE ELEMENTS FROM A. BUROV

E. Métral

- ◆ **A. Burov and V. Lebedev published 2 papers at EPAC02 (Transverse Resistive Wall Impedance for Multi-Layer (1) Round and (2) Flat Chambers)**
- ◆ **A. Burov came at CERN last June for 2 weeks and extended their theory to ferrites (LHC Project Note 353 (revised))**
- ◆ **Comparison between the 2 formulae on a SPS MKE kicker**
- ◆ **Comparison between the 2 formulae on a LHC graphite collimator**

INTRODUCTION

- ◆ Their EPAC02 paper assumes a metal as a first layer \Rightarrow The response on the beam electric dipole is an instantaneous shielding of its fields by charges induced at the very surface of the chamber
- ◆ \Rightarrow Burov extended his paper to the case of an arbitrary conductivity (CGS units). In fact it takes a certain time for the electric field to be shielded in the general case

$$Z_{\perp} = Z_{\perp}^{\sigma} + Z_{\perp}^{\infty} + Z_{\perp}^{\xi}$$

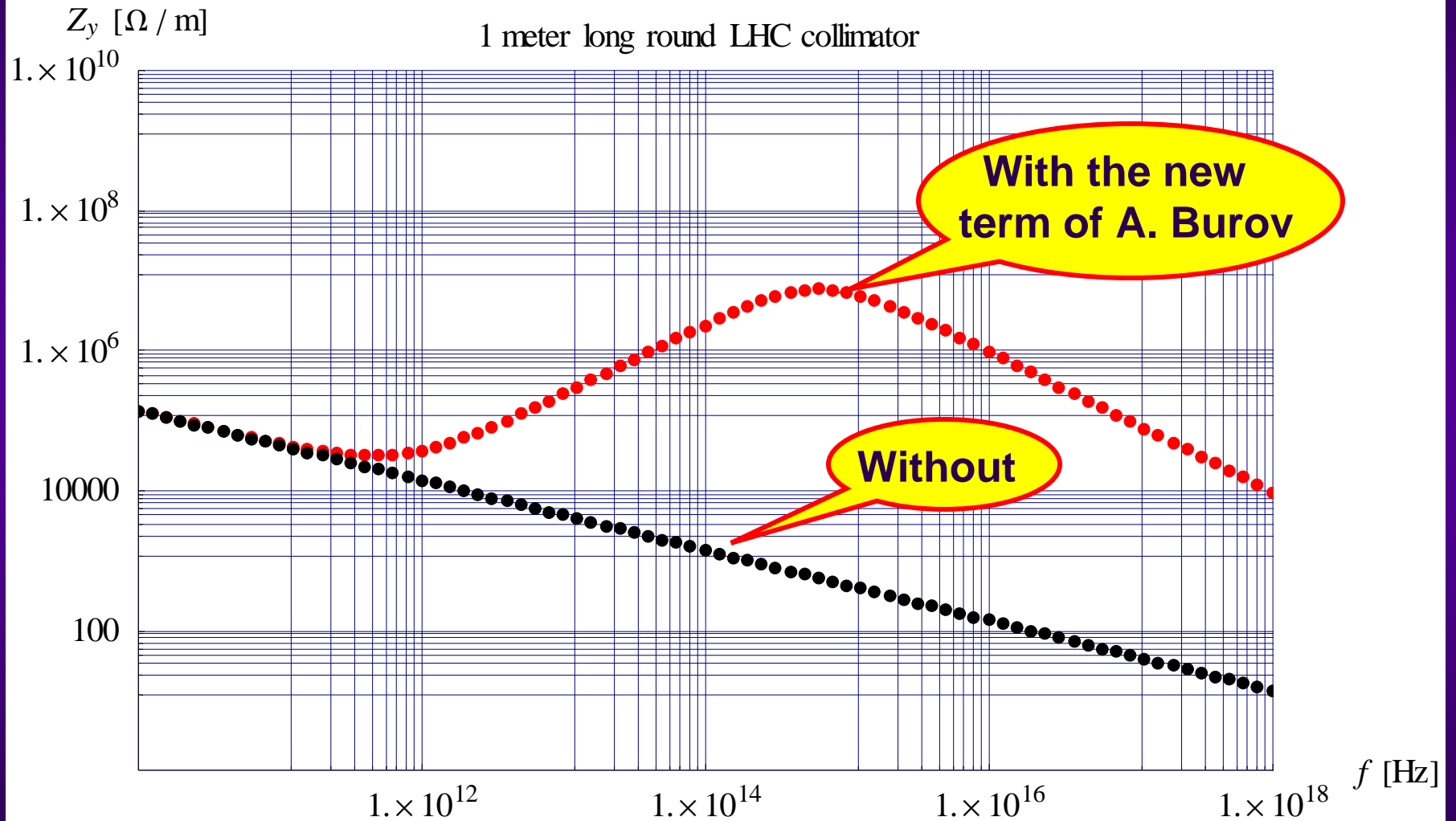
New term

$$Z_{\perp}^{\xi} = i \frac{Z_0}{\pi a^2 \beta} \frac{1}{1 + \varepsilon} = i \frac{Z_0}{\pi a^2 \beta} \frac{1}{1 + \varepsilon' + 4\pi i \sigma / \omega}$$

COMPARISON BETWEEN THE 2 FORMULAE FOR THE CASE OF A SPS MKE KICKER



COMPARISON BETWEEN THE 2 FORMULAE FOR THE CASE OF A LHC GRAPHITE COLLIMATOR



CONCLUSION

- ◆ This term does not explain the difference between Zotter and Burov-Lebedev for the SPS MKE kicker

