

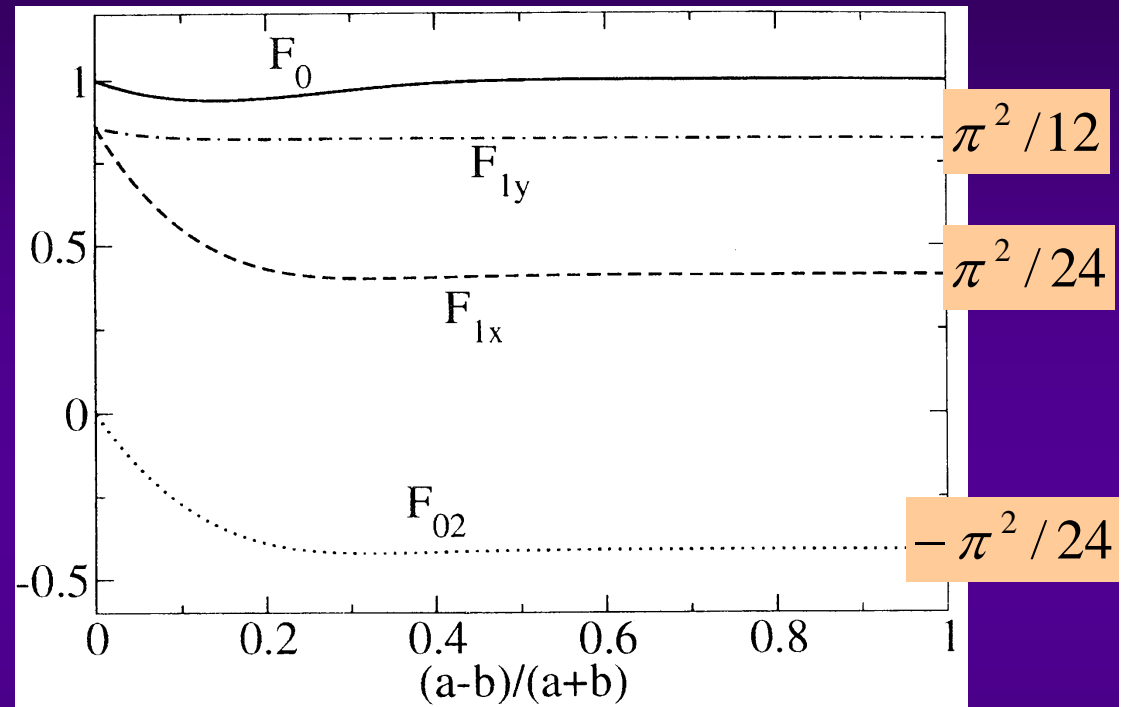
SINGLE WIRE MEASUREMENTS FROM TSUTSUI

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⇒ **Tsutsui's paper CERN-SL-Note-2002-034 AP**

Longitudinal impedance for a 2D rectangular metallic pipe of height 2b and width 2a (1/2)

$$\begin{aligned}
 Z_l &= \frac{1+j}{2\pi b \sigma \delta} L F_0 \\
 &+ \frac{1+j}{\pi b^3 \sigma \delta} L (F_{1x} + F_{02}) x_0^2 \\
 &+ \frac{1+j}{\pi b^3 \sigma \delta} L (F_{1y} - F_{02}) y_0^2 \\
 &+ O\left(\left(x_0, y_0\right)^4\right)
 \end{aligned}$$



- ◆ ⇒ The sum of the dipolar and quadrupolar impedances is measured with a single displaced wire
- ◆ This explains why very different results are measured with the 2-wire method (which measures only the dipolar impedance) and the single-wire method

Longitudinal impedance for a 2D rectangular metallic pipe of height $2b$ and width $2a$ (2/2)

- ◆ This can also explain a zero impedance in the horizontal plane, but not the negative value measured with the PS kickers. This certainly has to do with the fact that a good conductor is used in the horizontal plane, and ferrite in the vertical, whereas Tsutsui assumes the same material
- ◆ After all that, one should also take the finite length into account...

Kicker 1

