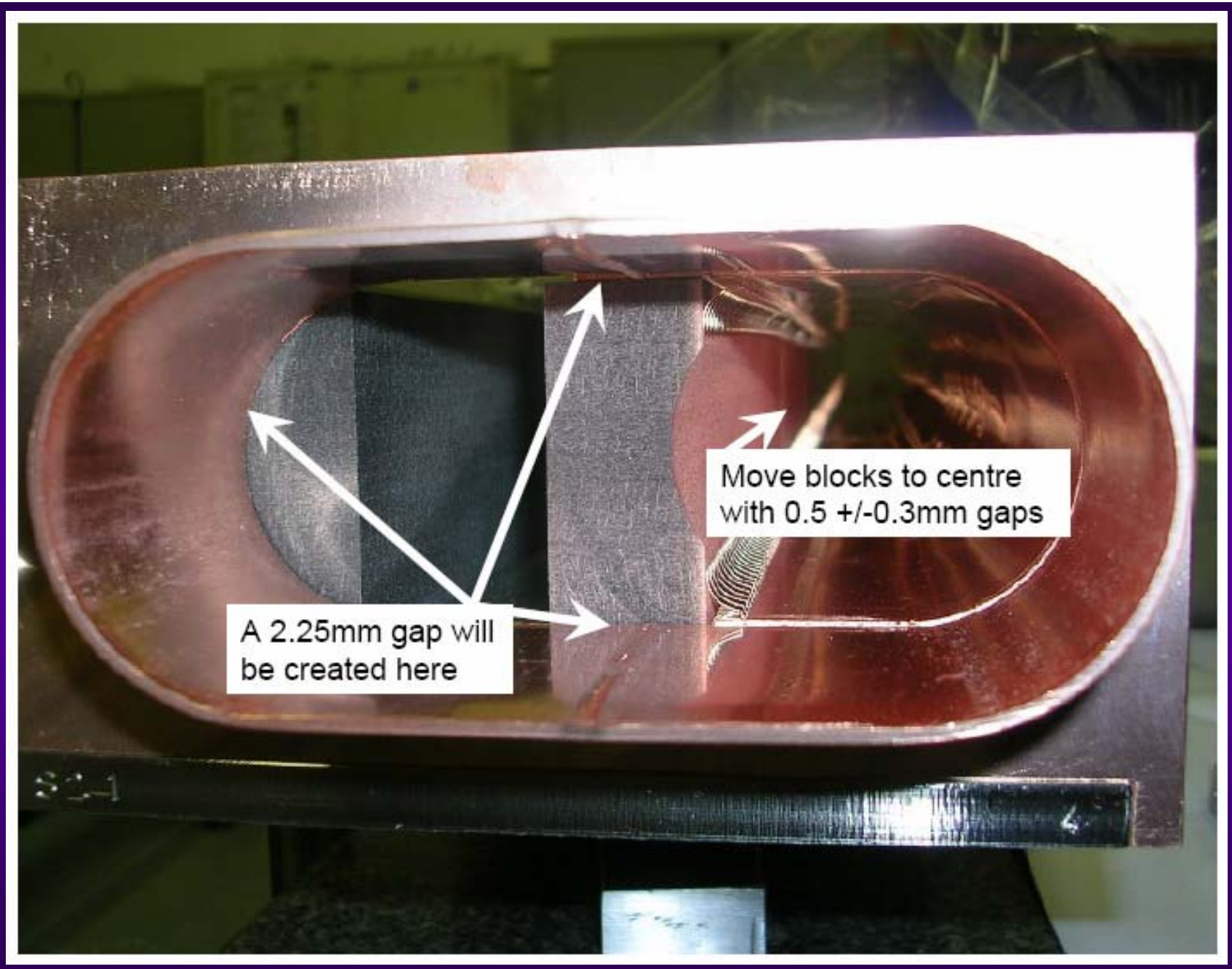
IMPEDANCE OF THE SLOTS IN THE TCDS

E. Métral

- In the current situation there are 11 slots/tank with an average dimension per slot of 1 +/-0.3mm (total accumulated slot length of 11mm/tank)

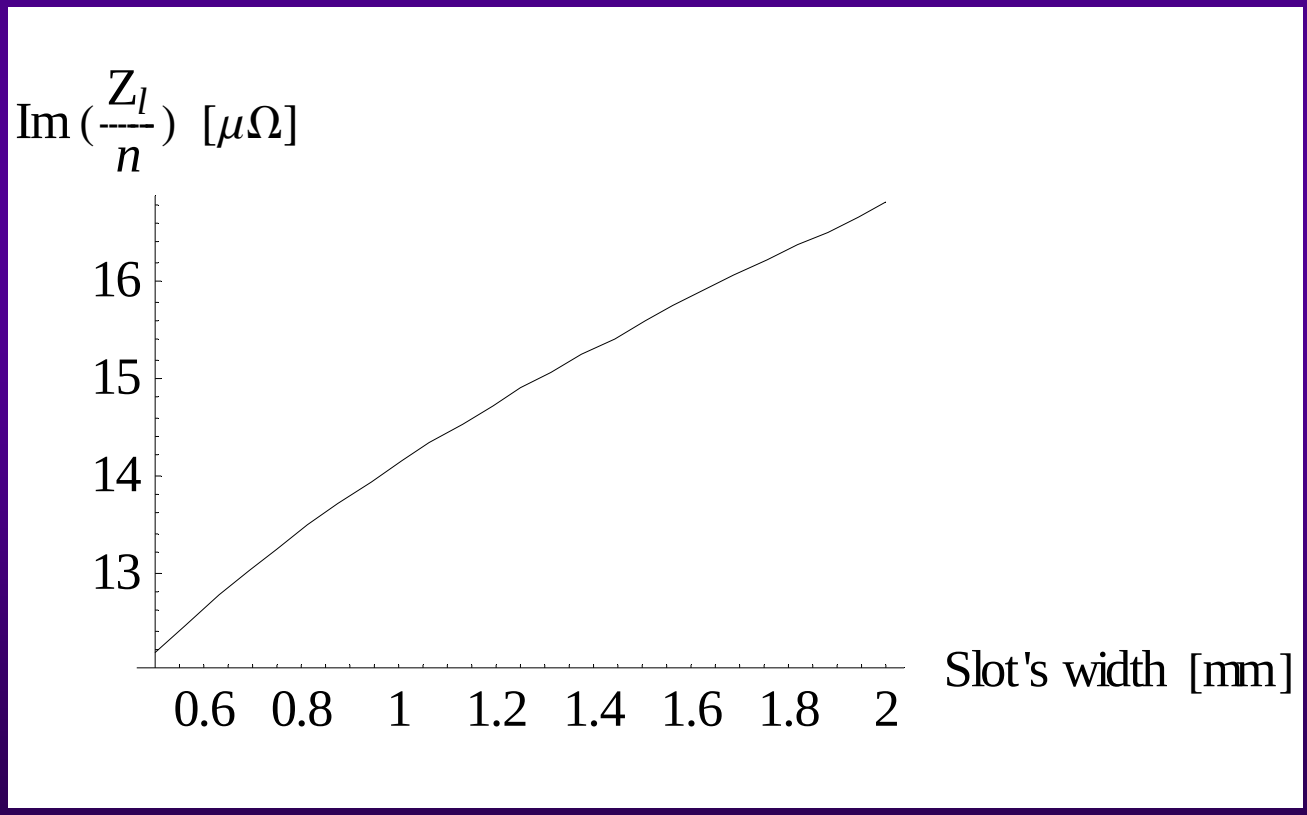
- Possibility to reduce these slots to 11 slots/tank with an average dimension per slot of 0.5 +/-0.3mm (total accumulated slot length of 5.5mm/tank). In order to achieve this, the slots are reduced by moving all blocks towards the centre of the absorber creating a 2.25mm gap at entrance and exit face of each absorber

- Our estimates of the broad-band impedance of each 1 mm slot is $Z_{\parallel}/n$ ~30 μΩ (from simulations by AG)


Move blocks to centre
with 0.5 +/-0.3mm gaps
A 2.25mm gap will
be created here

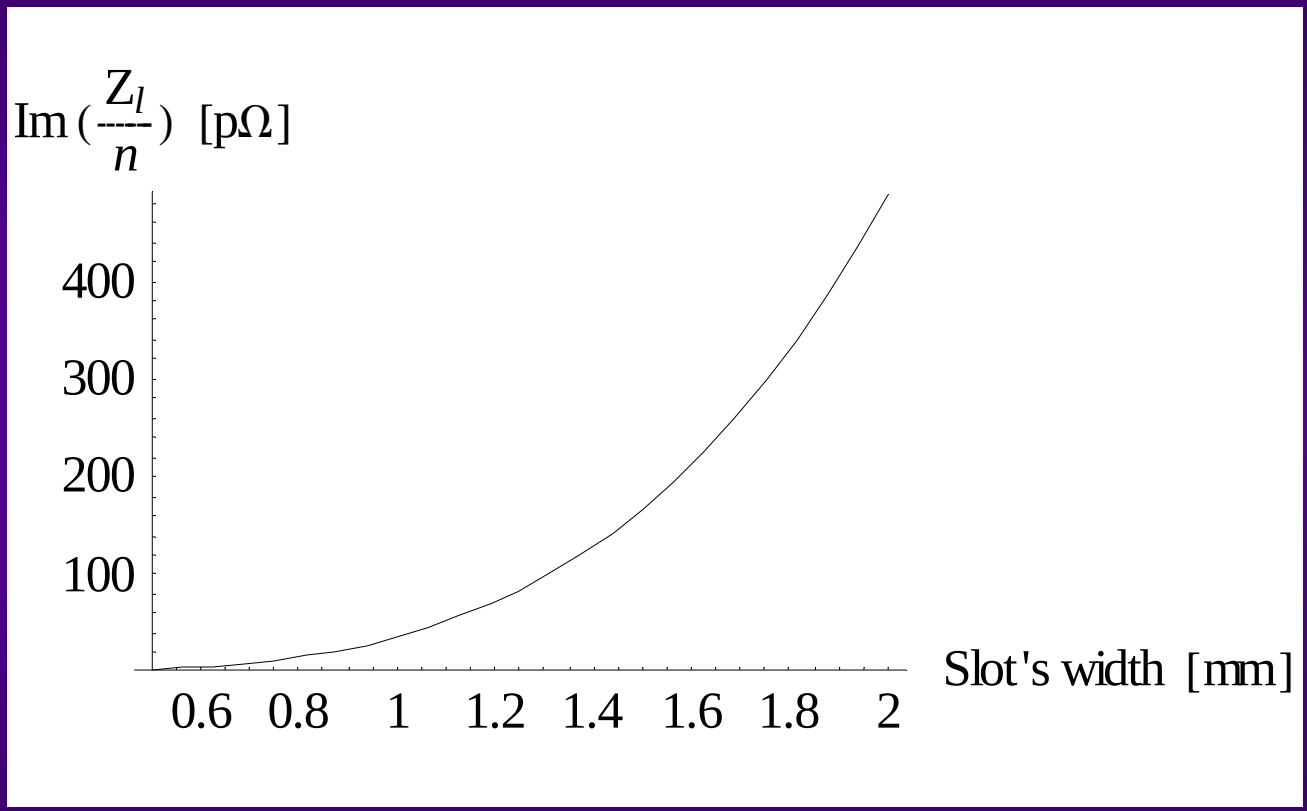
Longitudinal Broad-Band (inductive) impedance (1/2)

- **Transverse slot $\Longrightarrow$ ~ 15 μΩ for a gap of 1mm (~ consistent with AG), even if the formula I apply (I just copied it from Zotter's book!!!) is strictly valid only if the length of the slot is << the pipe radius (which is not the case here…). Furthermore, the fact that the wall has a finite thickness can reduce it until a factor of 2**



Longitudinal Broad-Band (inductive) impedance (2/2)

- **If it was a longitudinal slot (much better as in this case the lines of induced currents are not cut)**



Inclined slots (discussed with FC and FR) to be simulated…

- **The effect of reducing the gaps from 1 to 0.5 mm seems marginal. Furthermore, 2 big slots are created at the entrance and exit, which are not discussed here…**

- **The situation of the gaps in the TCDQ still needs to be studied (dixit Wim Weterings)**