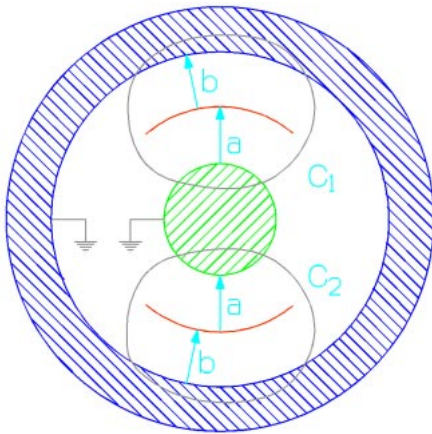


# Why the GG Design? Novelties and Advantages (V)

## A Very Reliable Read-Out at Room Temperature

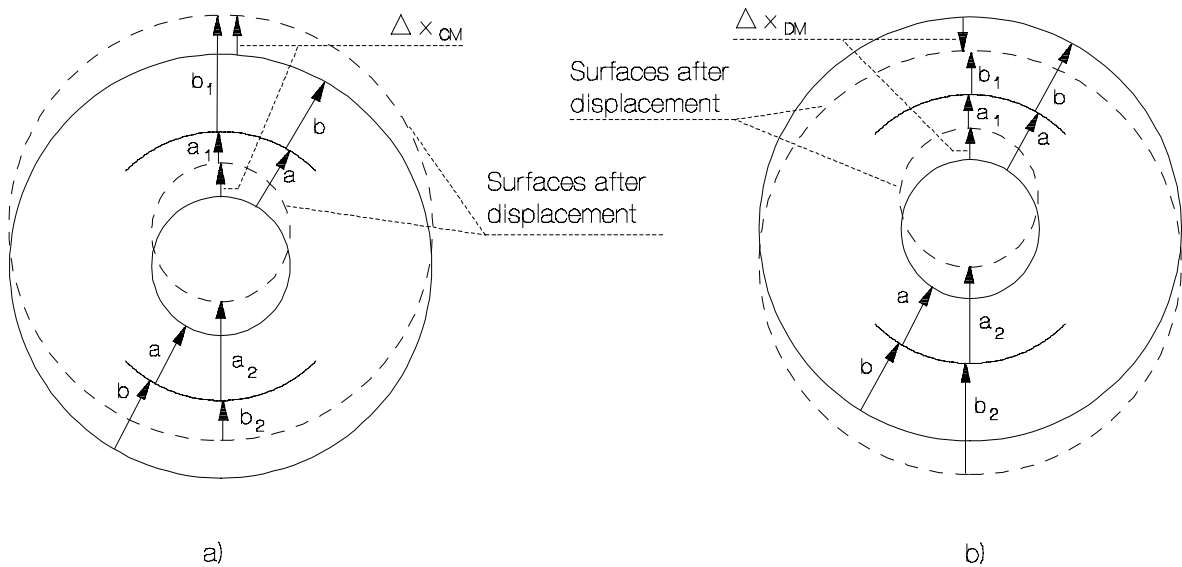
The GG experiment is at room temperature  $\Rightarrow$  it is possible to measure the relative displacements of the coaxial test cylinders with a capacitance read-out whose reliability is well known and for which we have already achieved in the laboratory the required sensitivity



$$a \cong b \cong 0.5 \text{ cm}$$

$$C_1 \cong C_2 \cong 100 \text{ pF}$$

If the plates are located exactly halfway in between the coaxial cylinders the capacitance bridge detects only differential displacements and is totally insensitive to displacements in common mode; depending on the accuracy of the mechanical centering of the plates, the bridge can be made insensitive to common mode displacements smaller than a given value.



$$a - b \leq 1.86 \text{ } \mu\text{m}$$

GG requirement for centering of the bridge

GG signal if EP violated to 1 part in  $10^{17} \Rightarrow \cong 1.2 \text{ nVolt}$  Ok