# Characterization of Scintillators as a function of their size measurements for Future Circular Collider - FCC

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Future Circular Collider -FCC

France

Switzerland

LHC

FCC 100 km circumference

### Calorimetry of the reference FCC-hh detector



Hadronic calorimeter based on scintillating tiles is proposed for the barrel (HB) and extended barrels (HEB) of the FCC-hh reference detector



The hadronic "Tile" calorimeter is a sampling calorimeter using Stainless Steel, lead and scintillating plastic tiles.

#### **Telimeter – Characterization of plastic**







## What is the purpose of our research?

Fibrometer – characterization of plastic scintillating or WLS optical fibres



Tile Center (tile #2)



#### Near the edge (tile #2)



• no mask • with mask — Linear (no mask) — Linear (no mask) — Linear (with mask)



Tile center # 1, with mask

*Near the edge* (#1), with mask



Distance from edge (mm)



The mean S/N ratio as a function of the distance to the readout tile edge of (a) a tile sized for the inner radius, and (b) a tile at the most-outer radius. The tile attenuation length was obtained through an exponential fit in each case. Error bars correspond to the rms of the response measured on a grid covering the surface of the tile.





TILE #2, WITH MASK (2 CM)



DISTANCE FROM EDGE (CM)

# **Conclusion and Questioning**

- •Tyvek;
- •MgO;
- •Teflon.