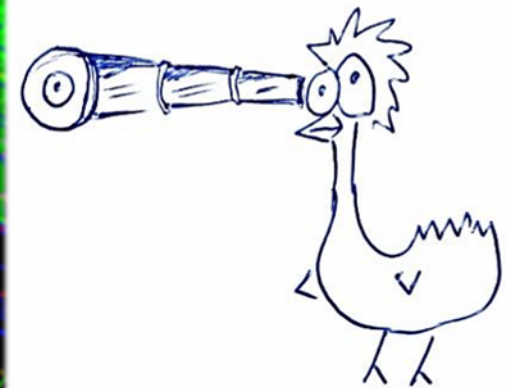


8 GeV central Au+Au

THE SILICON TRACKING SYSTEM OF CBM GETS READY

Adrian Rodríguez Rodríguez
for the CBM Collaboration



Spatial resolution

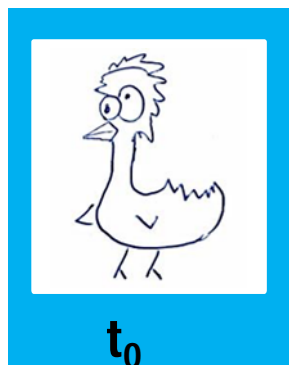


Poor resolution



High resolution

FAST detector and readout electronics



t_0



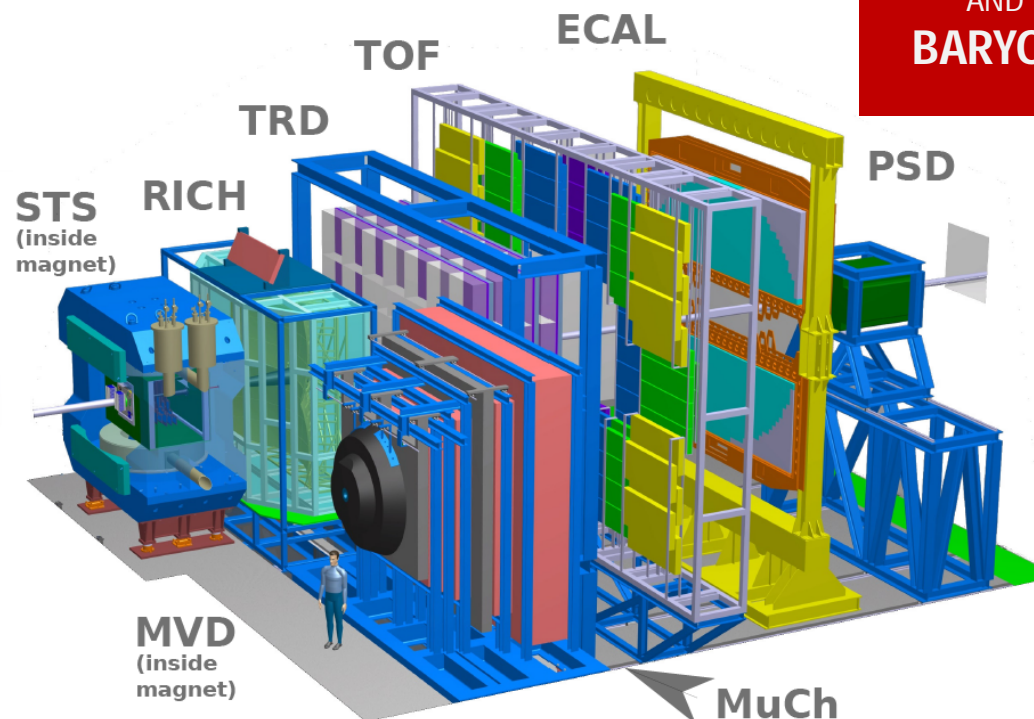
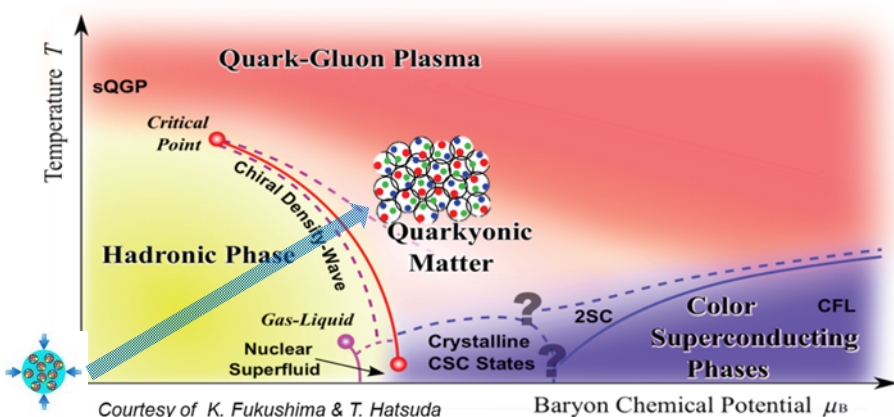
t_1

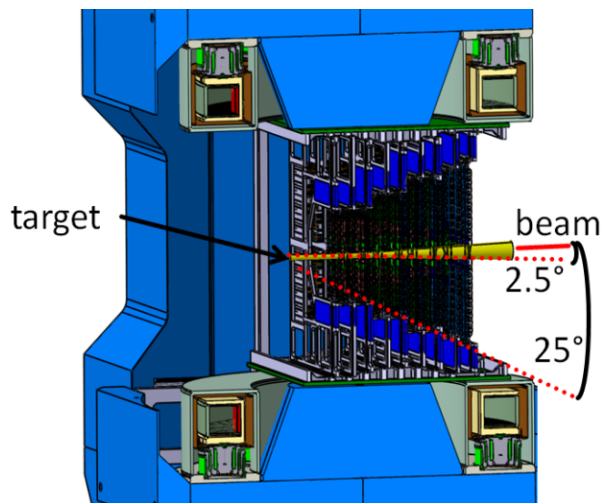


t_2

The Compressed Baryonic Matter experiment

- Fixed target experiment
- A+A collision at 0.1-10 MHz interaction rate
- Data rate ~ 1 TB/s
- Free-streaming readout
- On-line event selection



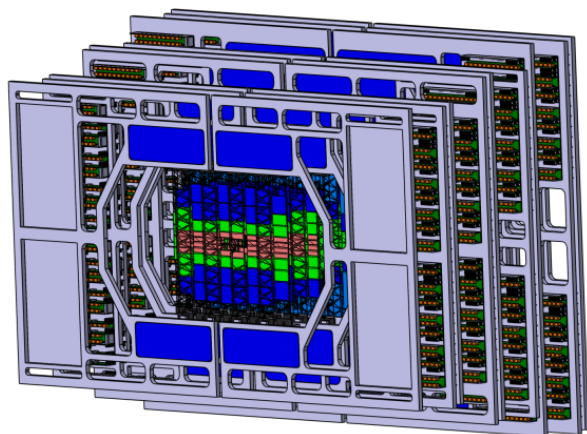


Silicon Tracking System is the core tracking detector of CBM

- momentum resolution $\Delta p/p \approx 1.8\%$ ($p > 1 \text{ GeV}/c$)
- hit efficiency $> 95\%$

Technical challenges:

- fast and radiation hard detectors and readout electronics
- ultra low material budget ($\approx 0.4\% - 1.4\% X_0$ per station)
 - double-sided sensors $\sim 300 \mu\text{m}$ thickness
 - readout electronics outside of acceptance
 - connected to sensors with micro-cables
- occupancy up to $10 \text{ MHz}/\text{cm}^2$
- ~ 900 detectors modules to be produced and checked
 - quality assurance procedures are required



CBM Phase_0 at GSI
from December 2018

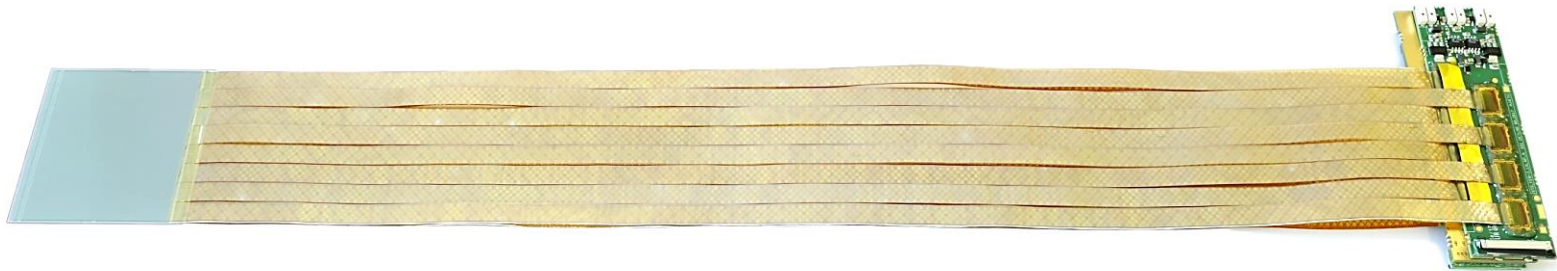
STS detector construction
2019 – 2024

mCBM (miniCBM):

Demonstrator for full CBM data taking and analysis chain under full load.
(Au-Au, 10^7 interactions/s)

mSTS:

2 tracking stations built from 13 detector modules (> 26000 readout channels)



STS fully assembled detector module

That's one small step for STS, one giant leap for CBM