The CBM Time-of-Flight system
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- Exploring the QCD phase diagram at large baryon densities
- Charged hadron PID for HI-collisions at kinetic beam energies $T_{\text{beam}} = 2 – 11$ AGeV (for the heaviest system)
- High granularity and rate capability for interaction rate $R \leq 10$ MHz
- Multi-gap Resistive Plate Chamber (MRPC) system with about 100000 timing channels and a system time resolution of $\sigma \approx 80$ ps
- Usage in STAR BESII campaign as part of the FAIR phase 0 program as eTOF system with acceptance range $1.0 \leq \eta \leq 1.5$

The Compressed Baryonic Matter (CBM) experiment

- Low resistive glass
- Will be used in the miniCB timing system
- Active area $300 \times 864 \text{ cm}^2$
- $2 \times 120 \text{ m}$ length in Phase 0
- High Rate capability $> 30$ kHz/cm
- Full system acceptance of $\geq 95\%$
- Efficiencies above $95\%$
- Free streaming data acquisition
- Software based event selection
- $\sim 80$ MHz

FAIR phase 0 program: eTOF upgrade at STAR/BNL

- Tracking acceptance: $2\varphi < \theta_{\text{lab}} < 25^\circ$
- Free streaming DAQ
- Software based event selection
- MRPC 1/2
- MRPC 2
- MRPC 3a/b
- MRPC 3a
- MRPC 3a/b pair cable
- MRPC 3a/b

FAIR phase 0 program: mTOF at mCBM/GSI

- eTOF hit matching ratio with TPC tracks
- eTOF Phase space acceptance and PID capability

Summary: The CBM Time-of-Flight system is developed by 8 institutions from China, Germany, Romania and Russia. It comprises about 100000 channels and a rate capability up to 30 kHz/cm$^2$. The targeted system time resolution is 80 ps at an efficiency above 95%. Test beam experiments have demonstrated counter resolutions in the order of 50 ps. CBM-TOF will participate as part of the FAIR phase 0 program in the BESII campaign of STAR@RHIC and miniCBM@GSI. The CBM-TOF wall will be ready to take beam at FAIR in 2024.