



Bundesministerium
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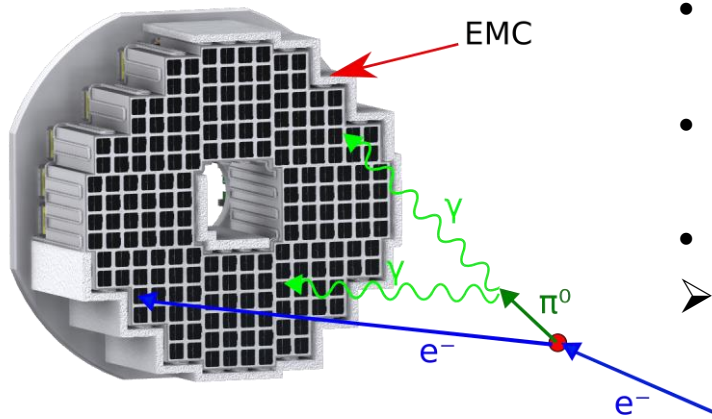
A PANDA FAIR Phase-0 Experiment at MAMI

(Measurement of the Pion Transition Form Factor in virtual Primakoff Kinematics)

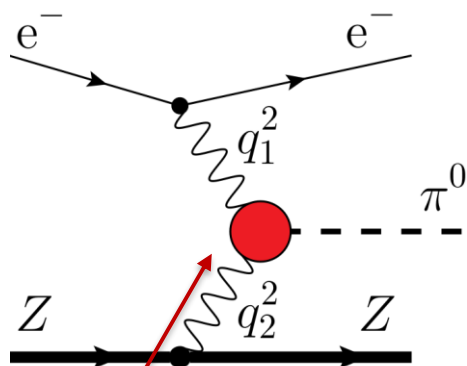
Sahra Wolff

Mainz, 15.06.2022

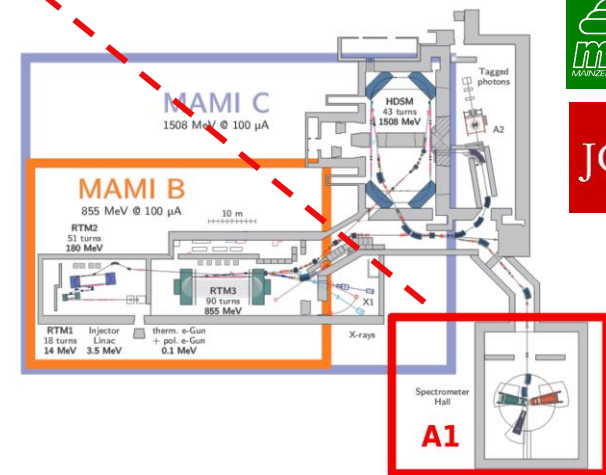
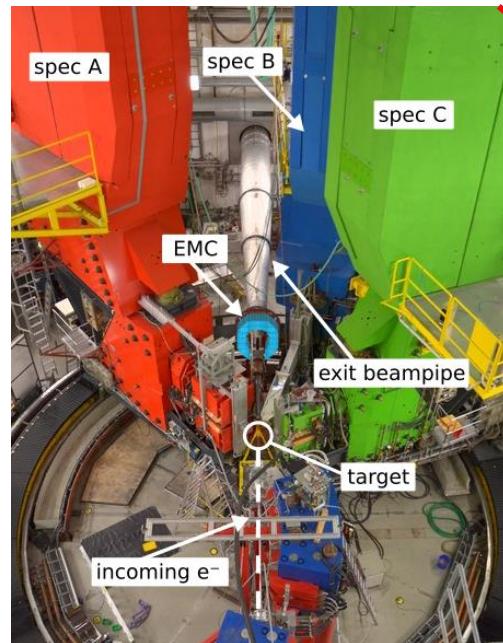
PANDA FAIR Phase-0 at MAMI



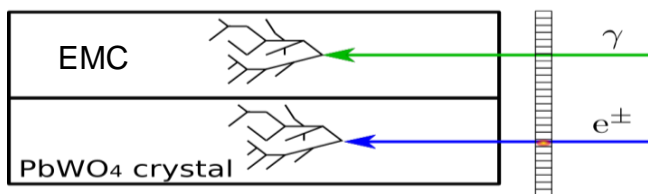
- Measurement of the Pion Transition Form Factor in virtual Primakoff Kinematics for small q_1
- Energy and position of electrons and photons can be determined by PANDA EMC
- Required precision: 1% for $q_1^2 = 0.01 \text{ GeV}^2$
- Contribution to the $(g_\mu - 2)$ Puzzle



Virtual Pion Transition Form Factor



Micromegas for FAIR Phase-0 at MAMI



EMC cannot distinguish between electrons and photons

Advantages of an Electron Tagger:

- Separation of electron and photon
 - Simplifies the event selection
 - Reduction of combinatoric background
- Better position determination of the electron
- ...

Requirements:

- detect electrons with $E > 100$ MeV
 - position resolution < 1 mm
 - electron detection eff. $> 99\%$
- blind for photons
- low material budget: $\sim 1-5\%$ of X_0
- radiation hard
- high readout rate: ~ 30 kHz/cm² for small angles (signal rate < 1 Hz)
- ~ 3500 channels \rightarrow 28 VMM boards

