

Some words on the hadron triggers for 2012  
*Trigger Convention Bonn*

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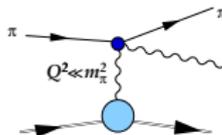
Institut für Kernphysik Mainz

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As outlined by B.Ketzer and J.Friedrich (*viz.* TB meeting, 2011-09-05):

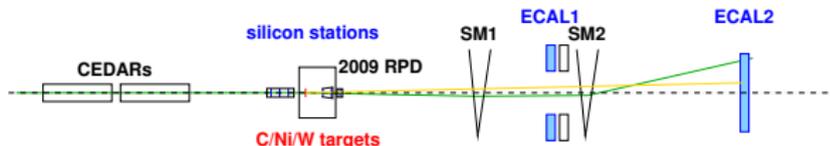
**Primakoff:**  $\pi/K$  on Ni with  $Q^2 < 10^{-3} \text{ GeV}^2/c^2$   
 dominated by  $\gamma$ -exchange  $\leftrightarrow$   
 $\sum p_T \approx 0$



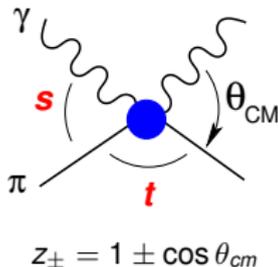
$$\pi /K + \gamma \rightarrow \begin{cases} \pi /K + \gamma & \rightarrow \text{polarisabilities} \\ \pi /K + \pi^0/\eta & \rightarrow \text{chiral anomaly} \\ \pi /K + \pi^{0,-}/\eta + \pi^{0,+}/\eta & \rightarrow \text{chiral tree \& loops} \\ \pi /K + n \cdot [\pi/K]^\pm & \rightarrow \text{radiative couplings, exotics} \end{cases}$$

## Diffraction:

- $\pi/K$  beam + nucl. targets: final states with  $3\pi$ ,  $5\pi$  (charged + neutral, low (high)  $t$ )
- $A$  dependence down to small  $A$  (Be?)
- Color transparency, di-jets



# Polarisabilities



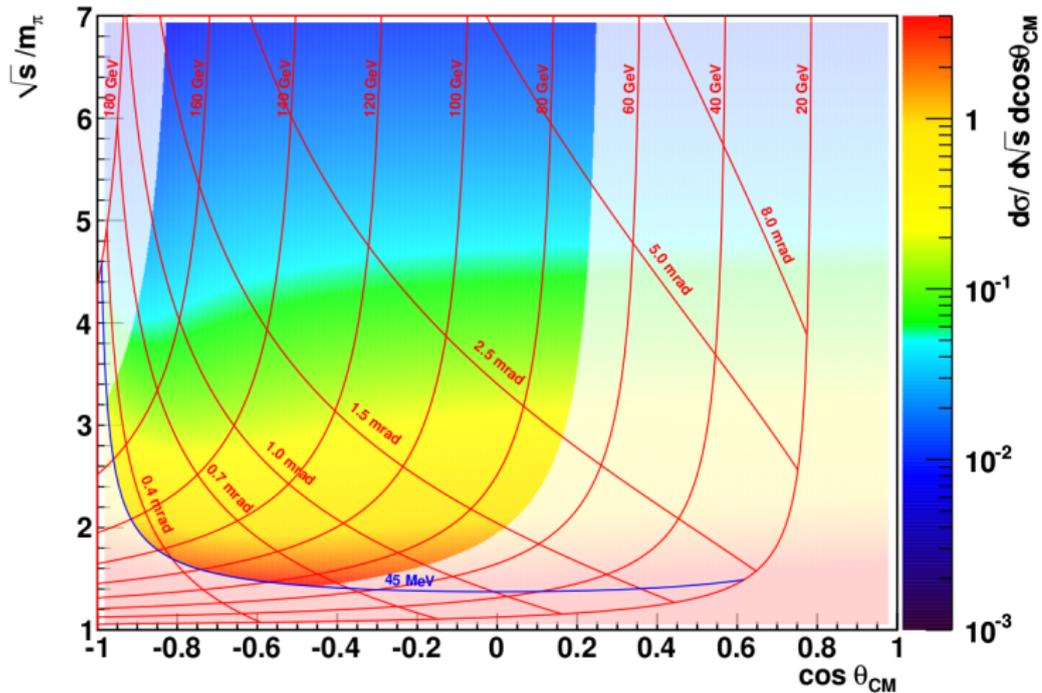
$$\frac{d\sigma_{\pi\gamma}}{d\Omega_{cm}} = \frac{\alpha^2 (s^2 z_+^2 + m_\pi^4 z_-^2)}{s (s z_+ + m_\pi^2 z_-)^2} - \frac{\alpha m_\pi^3 (s - m_\pi^2)^2}{4s^2 (s z_+ + m_\pi^2 z_-)} \cdot \mathcal{P}$$

where

$$\mathcal{P} = z_-^2 (\alpha_\pi - \beta_\pi) + \frac{s^2}{m_\pi^4} z_+^2 (\alpha_\pi + \beta_\pi) - \frac{(s - m_\pi^2)^2}{24s} z_-^3 (\alpha_2 - \beta_2)$$

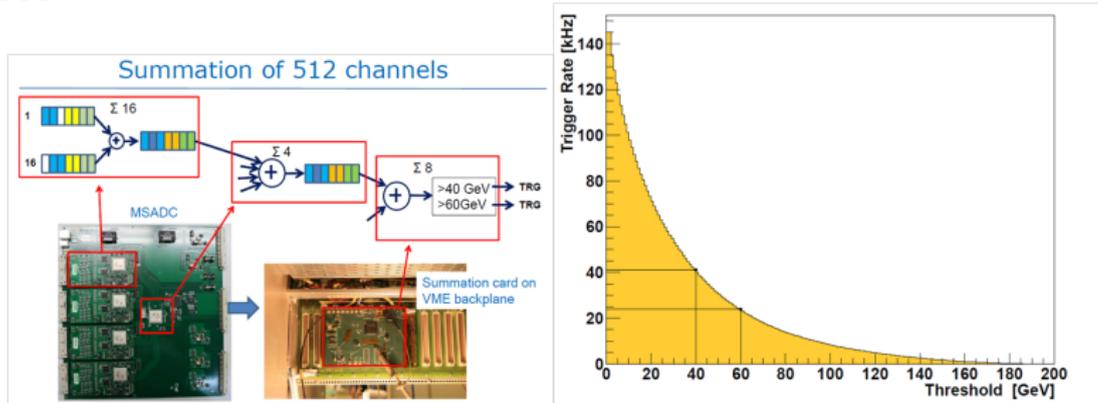
- leading (non-pointlike) order:  $(\alpha_\pi - \beta_\pi)$   
 → suppression of large  $E_\gamma^{lab}$
- next (“s-dependent”) order:  $(\alpha_\pi + \beta_\pi)$  and  $(\alpha_2 - \beta_2)$

# Polarisabilities - kinematical coverage

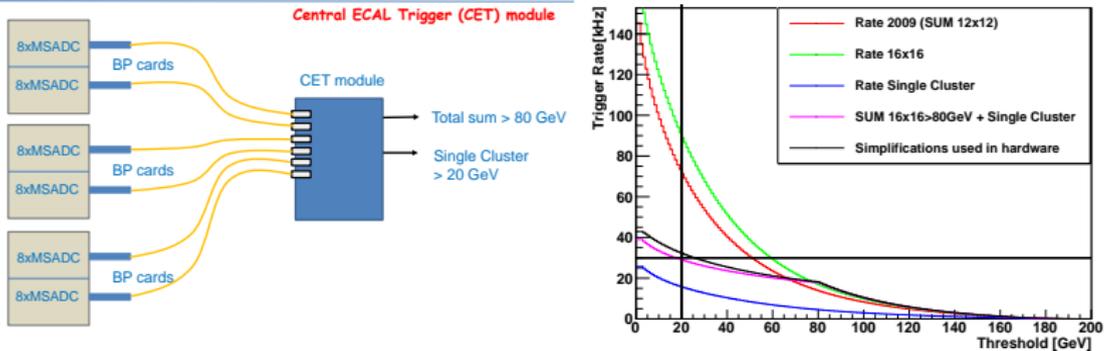


# ECAL2 Trigger

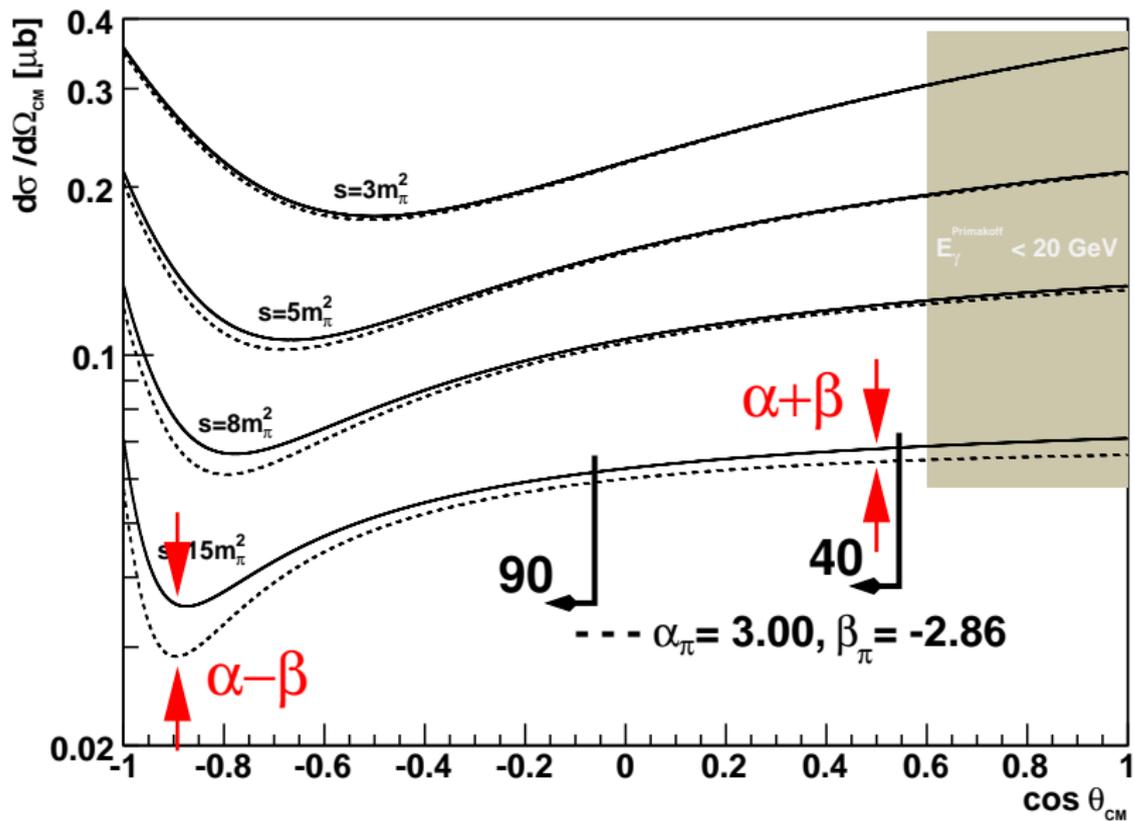
2009:



2012 (maybe):



# Polarisabilities - Trigger threshold



# Requests

from B.Ketzer, TB 2011-11-10:

- **ECAL2:** Total energy combined with single cluster (Igor, Stefan Huber)
- **Beam:** (a)BT
- **Vetos:** upstream of target, beam killer, Sandwich, no Mainz counter
- **CEDAR:**  $K^-$ 
  - No readout errors (CATCH)
  - Automated filling
  - Fast sampling readout
- **RPD:**
  - tag recoil particles  $\Rightarrow$  background studies for Primakoff
  - DT0
- **Multiplicity:**
  - scintillator disk, 5 cm diam., 3 mm thick
  - downstream of conical cryostat
  - 2 PMT + fast sampling readout

+ movement HO04 (cf. email J.Friedrich, T.Nagel, 2011-11-24)

