

# Cascading decays of nucleon resonances via meson-pair emission (is there really a narrow nucleon resonance at $\approx 1700$ MeV?)

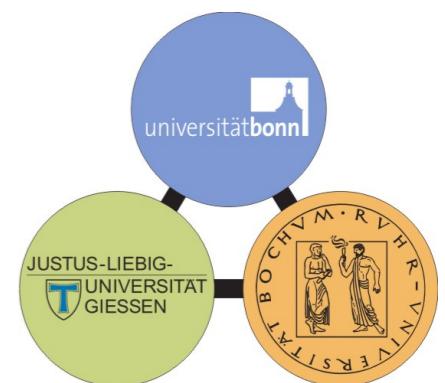
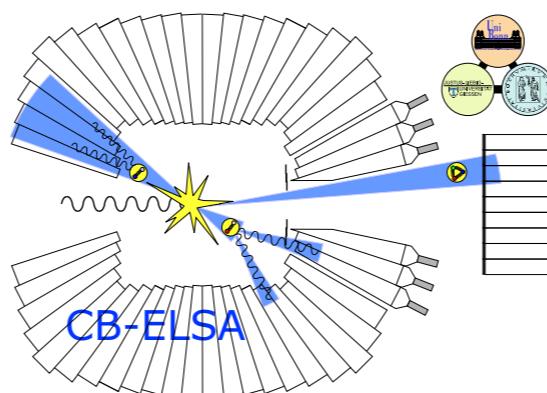
M. Nanova and V. Metag for the CBELSA/TAPS Collaboration

II. Physikalisches Institut

Justus-Liebig-Universität Giessen, Germany

57. International Winter Meeting Bormio, Italy

21 - 25 January 2019

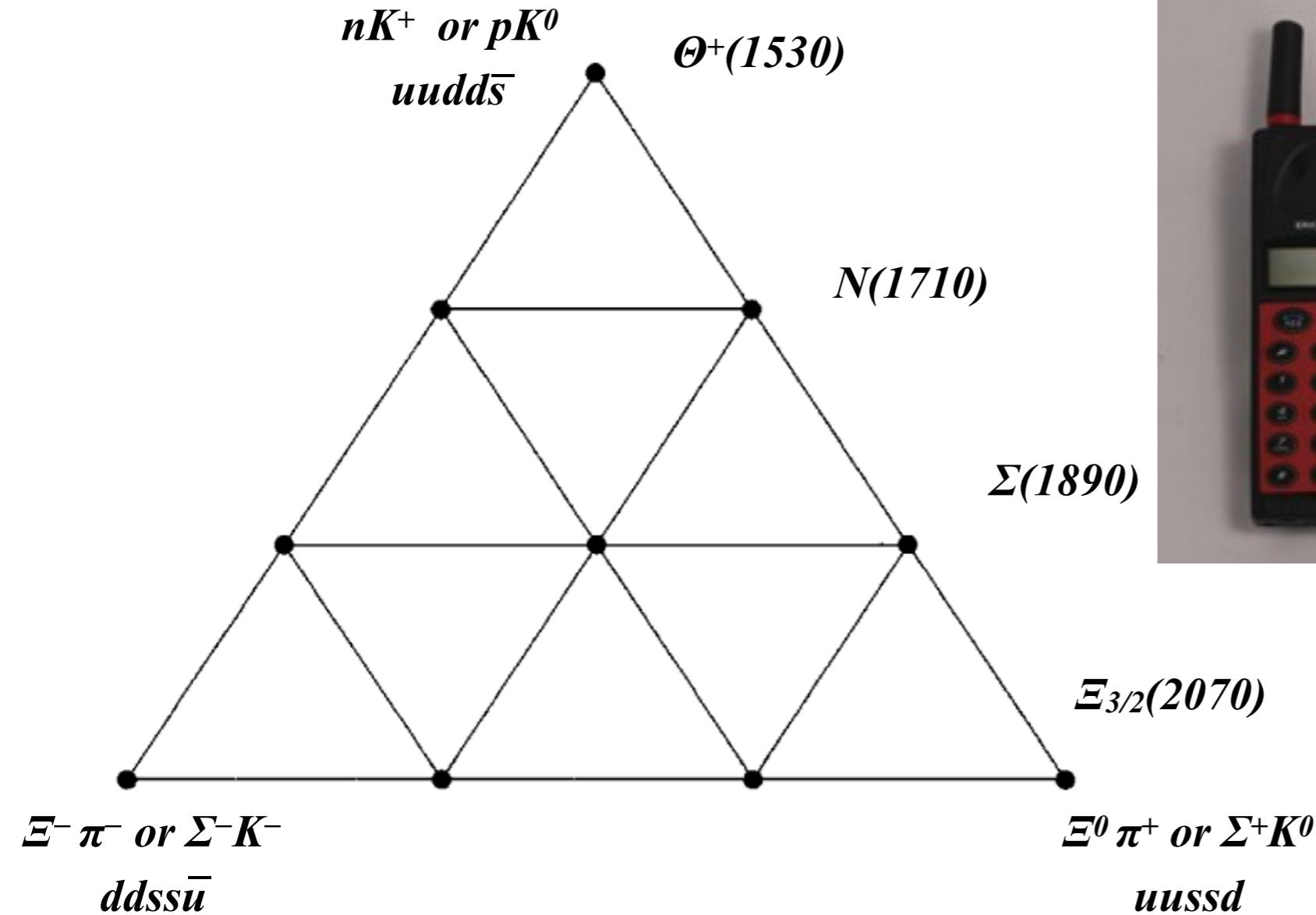


\*funded by the DFG within SFB/TR16

# The Anti-Decuplet of baryons in the Chiral Soliton Model

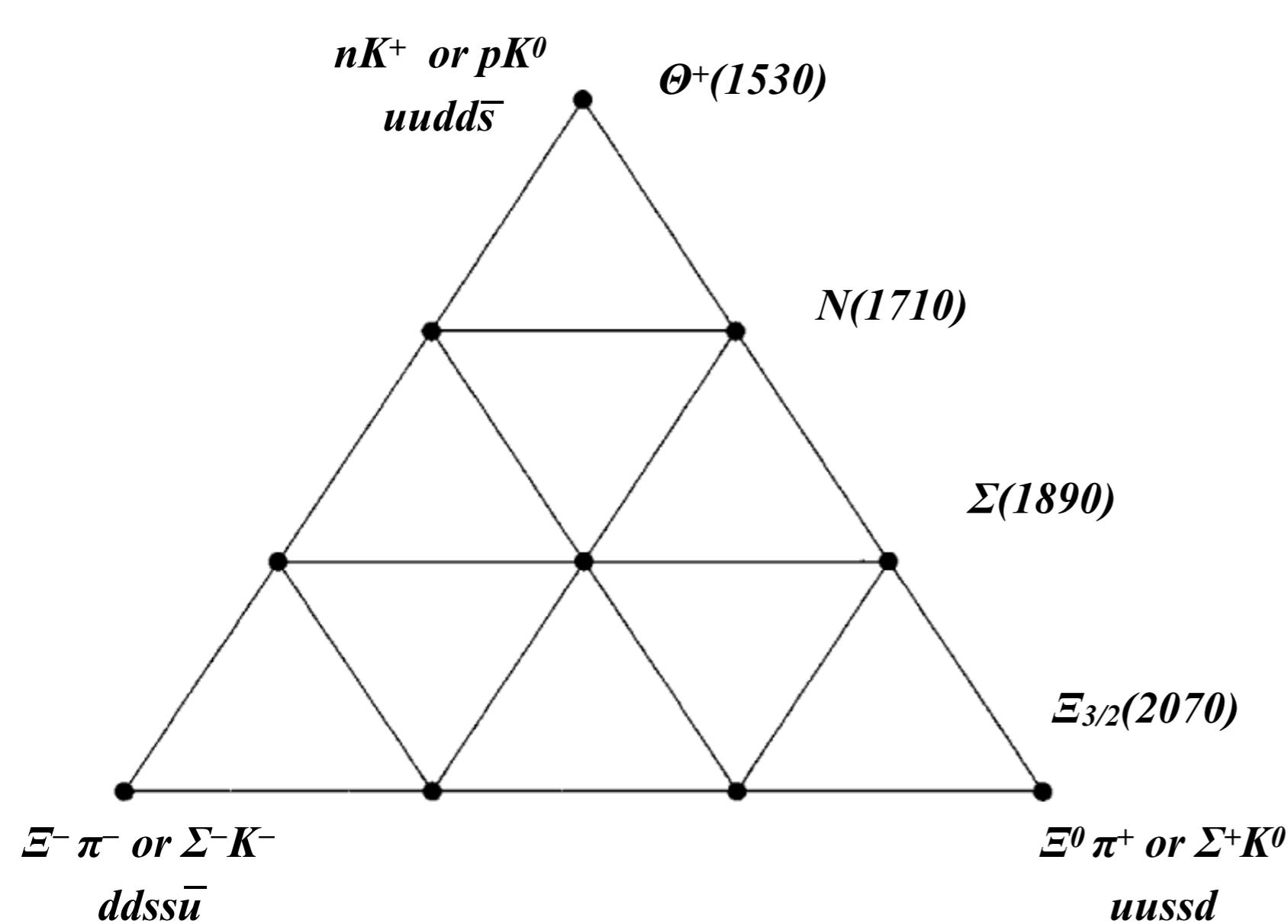
D. Diakonov, V. Petrov, and M.V. Polyakov, Z. Phys. A 359 (1997) 305

mobile phones 1997



# The Anti-Decuplet of baryons in the Chiral Soliton Model

D. Diakonov, V. Petrov, and M.V. Polyakov, Z. Phys. A 359 (1997) 305



Pentaquark state  $\Theta^+$   
in strangeness sector  
not observed

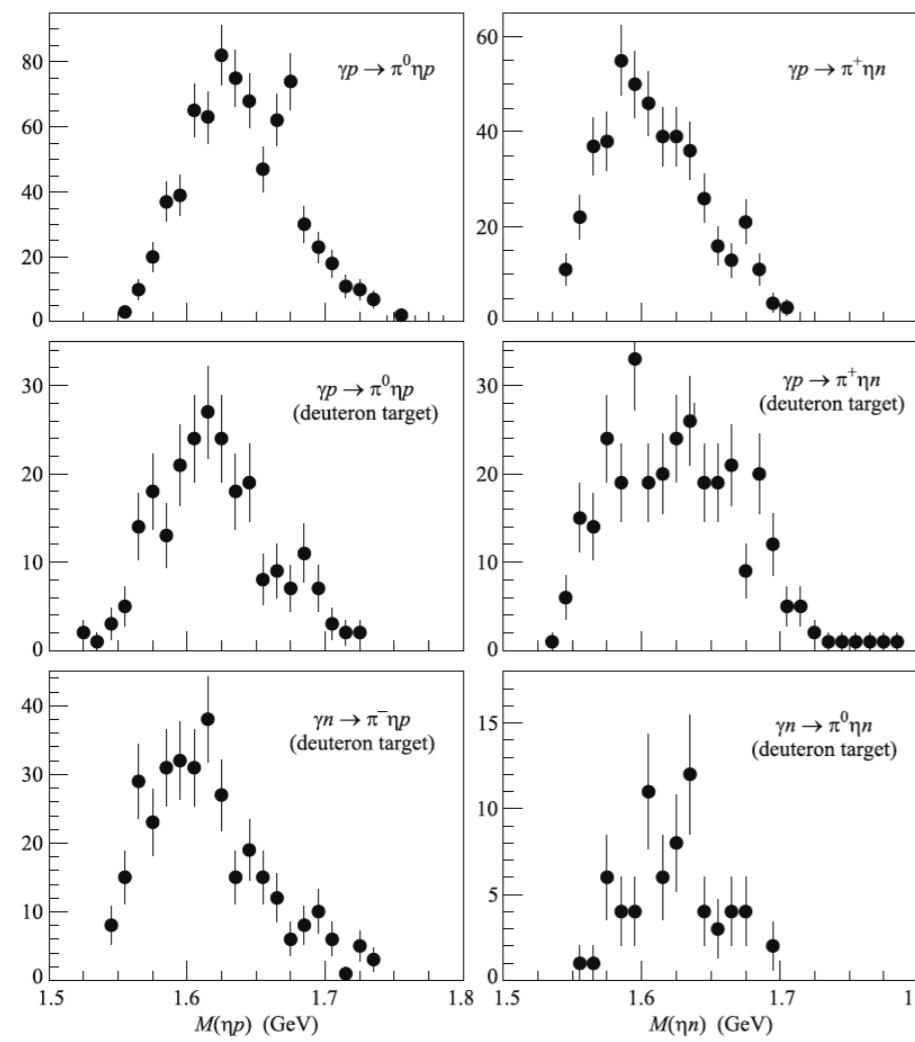
renewed interest after evidence  
for Pentaquark states  
in charm sector  
LHCb Collaboration:  
R. Aaij et al., PRL 115 (2015) 072001

# Observation of narrow N(1685) resonances in $\gamma N \rightarrow \eta\pi N$ reactions

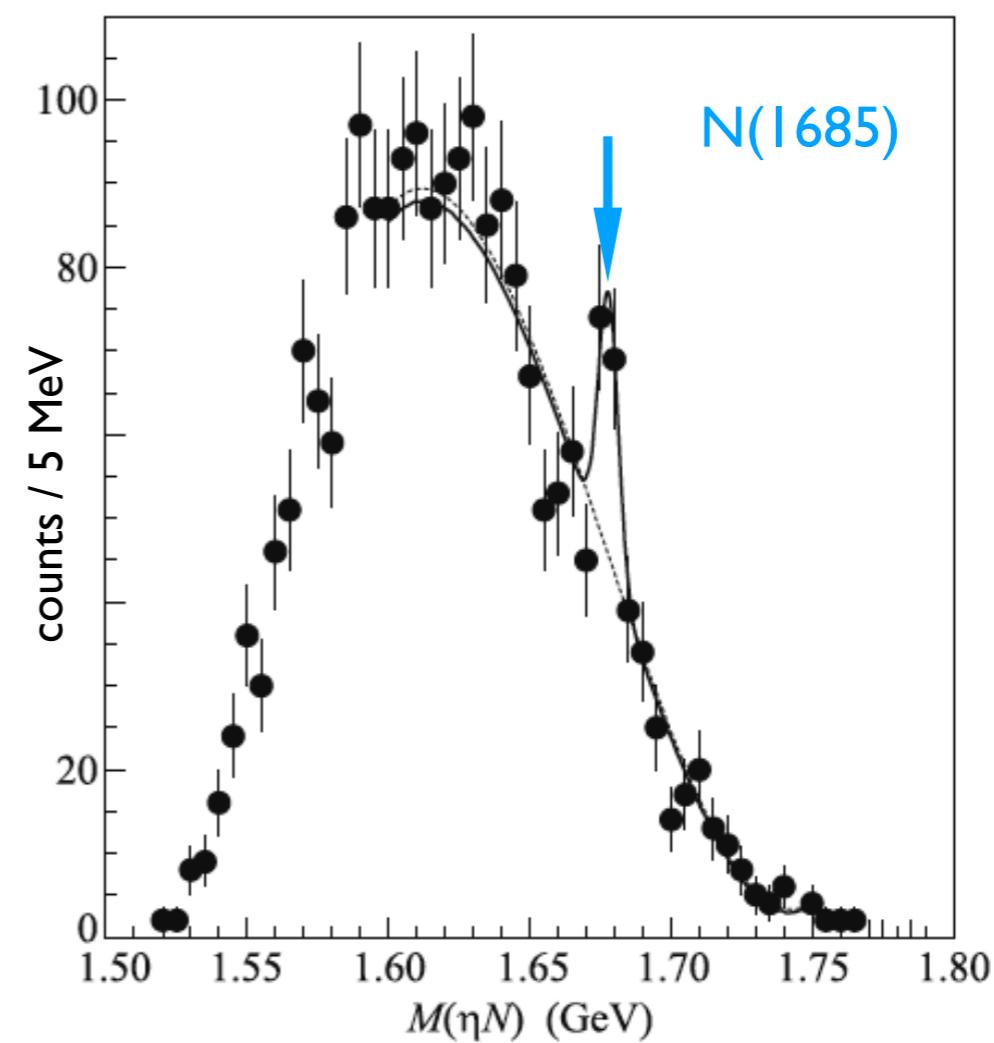
V. Kuznetsov et al., JETP Letters 106 (2017) 693

$E_\gamma = 1400 - 1500$  MeV (GRAAL data)

different  $\pi\eta N$  channels



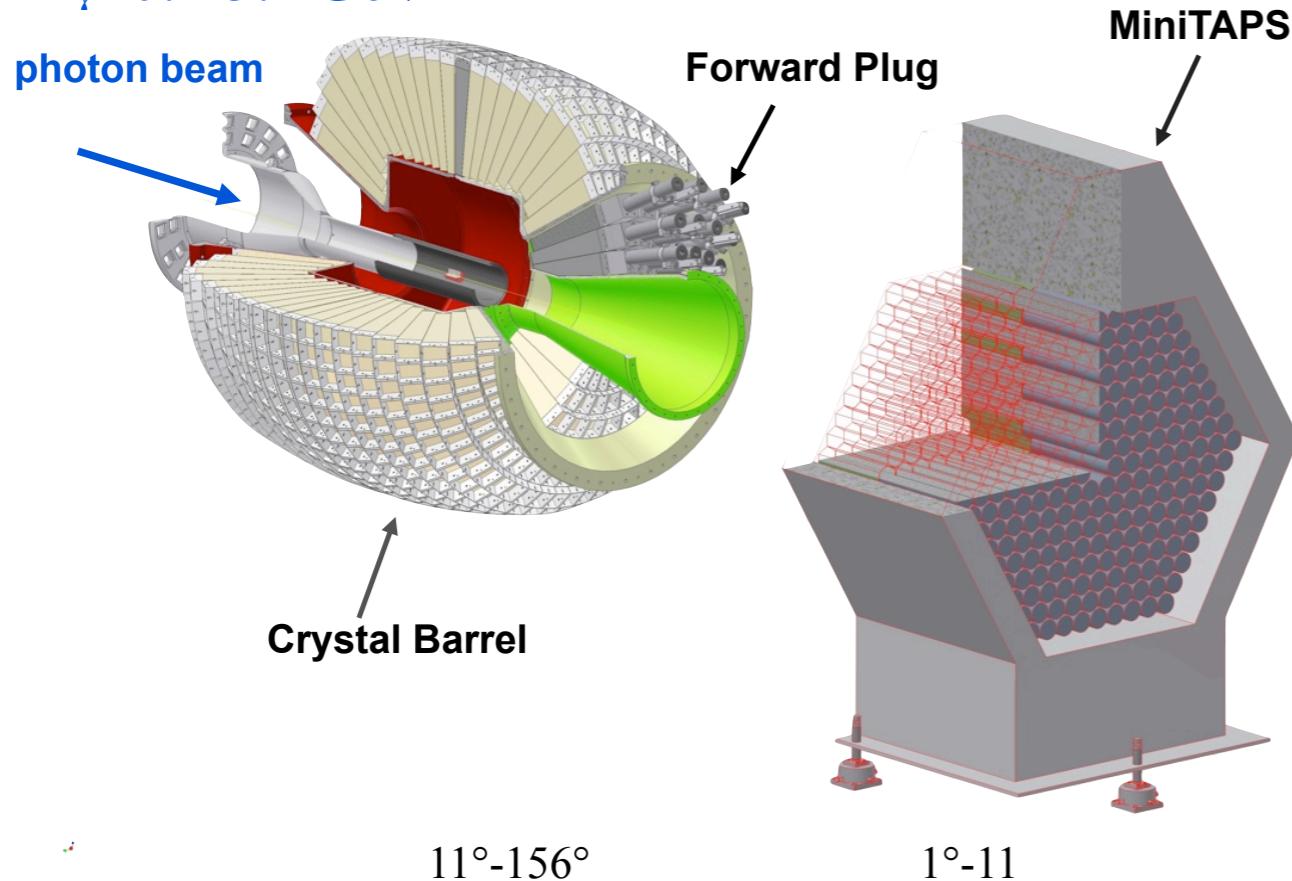
summing the different channels



is the narrow structure in  $M(\eta N)$  real?

# CBELSA/TAPS Experiment

$E_\gamma = 0.7\text{-}3.1 \text{ GeV}$

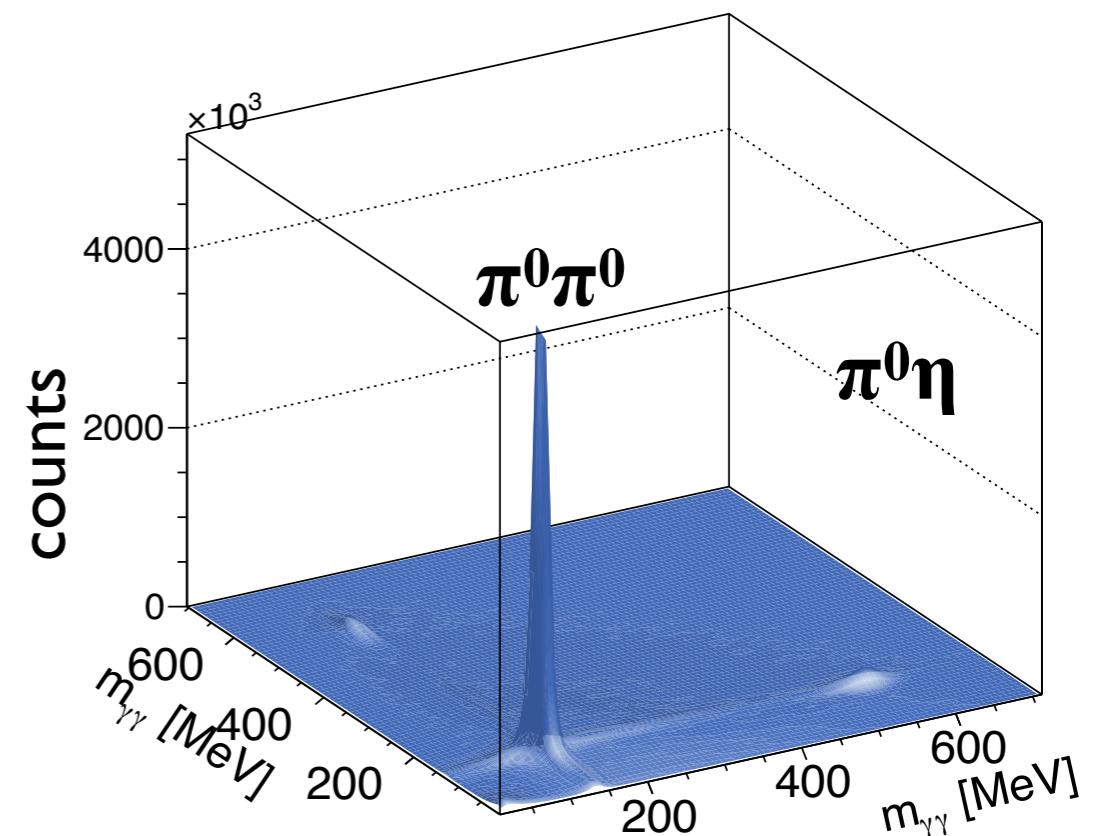


4π photon detector: ideally suited for identification of multi-photon final states

identification of  $\gamma p \rightarrow p\pi^0\eta$ :

decay channels:

$\pi^0 \rightarrow \gamma\gamma$  and  $\eta \rightarrow \gamma\gamma$



4 photons in the final states

$2 \cdot 10^7 p\pi^0\eta$  events

40 times the statistics of Kuznetsov et al.

# Experimental results

---

## Experimental results

---

**if you really want to know whether we confirm the existence of  
a narrow nucleon resonance at 1700 MeV**

*come to my poster !*