

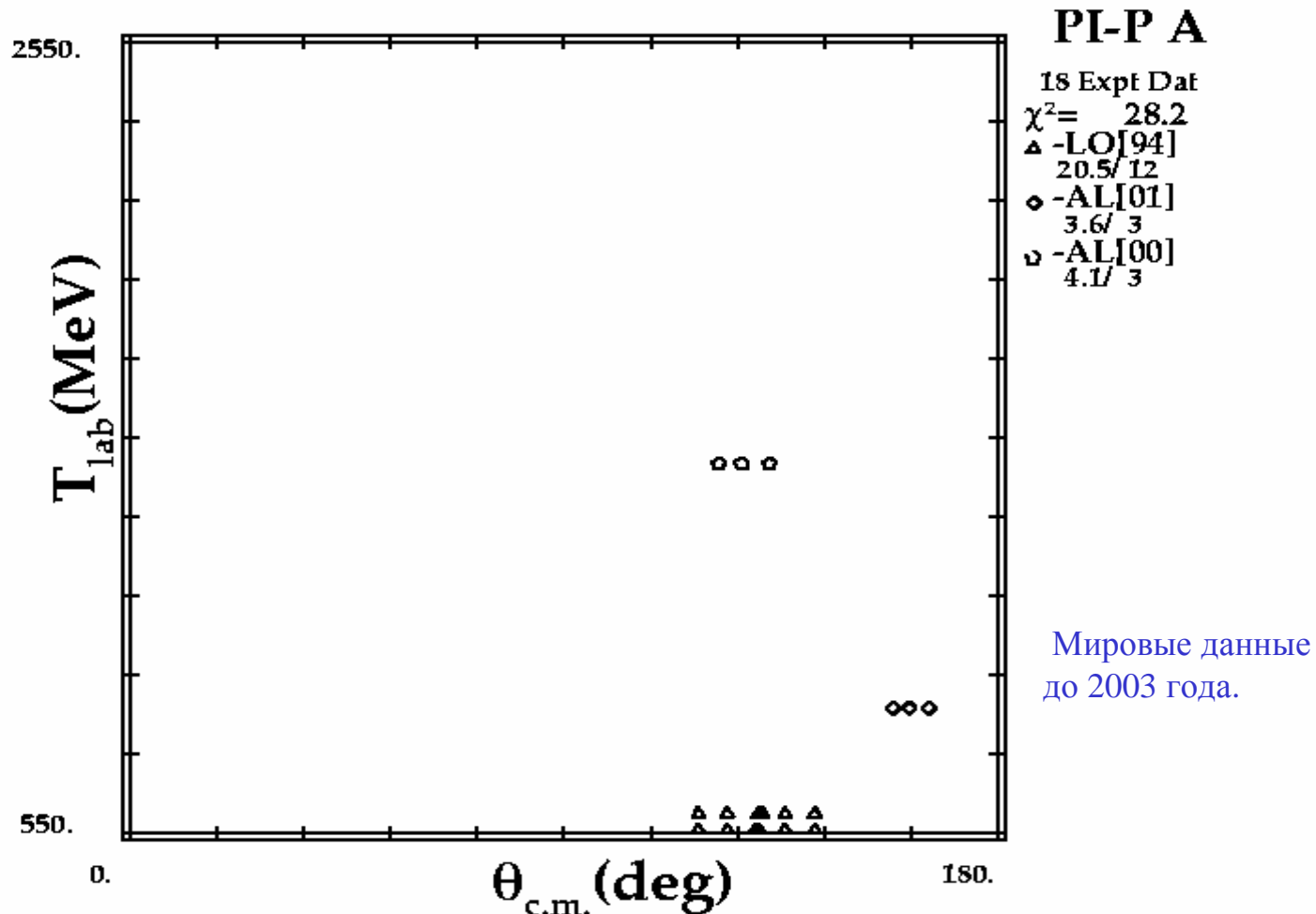
Лаборатория мезонной физики - 2003 год

Содержание.

(Лаборатория мезонной физики)

1. Установка SPIN-P02 (ИТЭФ).
2. Изучение реакции перезарядки (ПИЯФ).
3. Crystal Barrel (ISKP, Bonn).
4. Crystal Ball (Univ. Mainz).
5. Новый ПВА для пион-нуклонного взаимодействия.
6. Проект эксперимента для J-PARC.

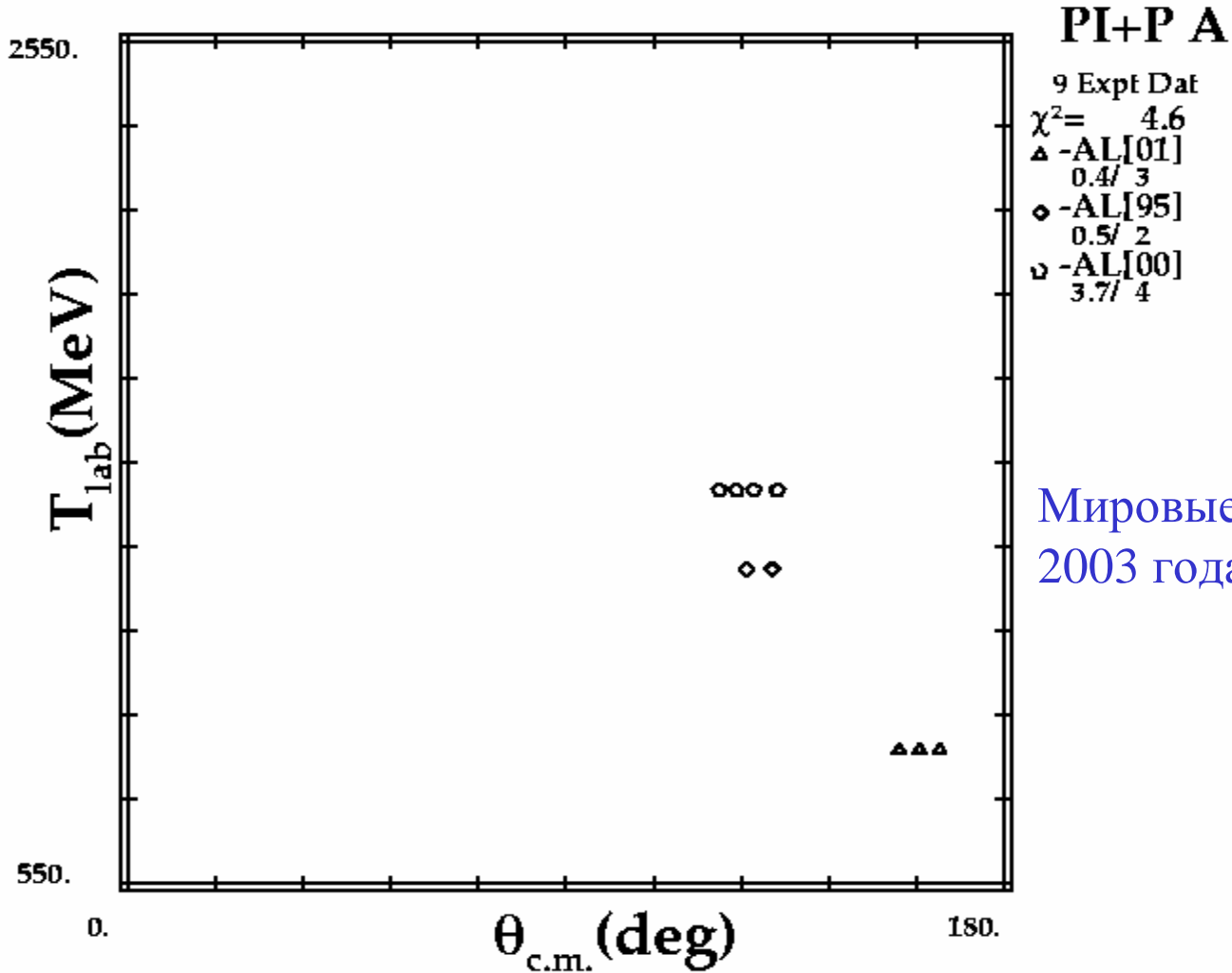
Параметр вращения спина $A(-)$. $A(-)$



FA02 766276 45874/23979 P+=21735/10468 P-=18932/ 9650 CX=
 Min/Max= -1.00/ 1.00

Лаборатория мезонной физики - 2003 год

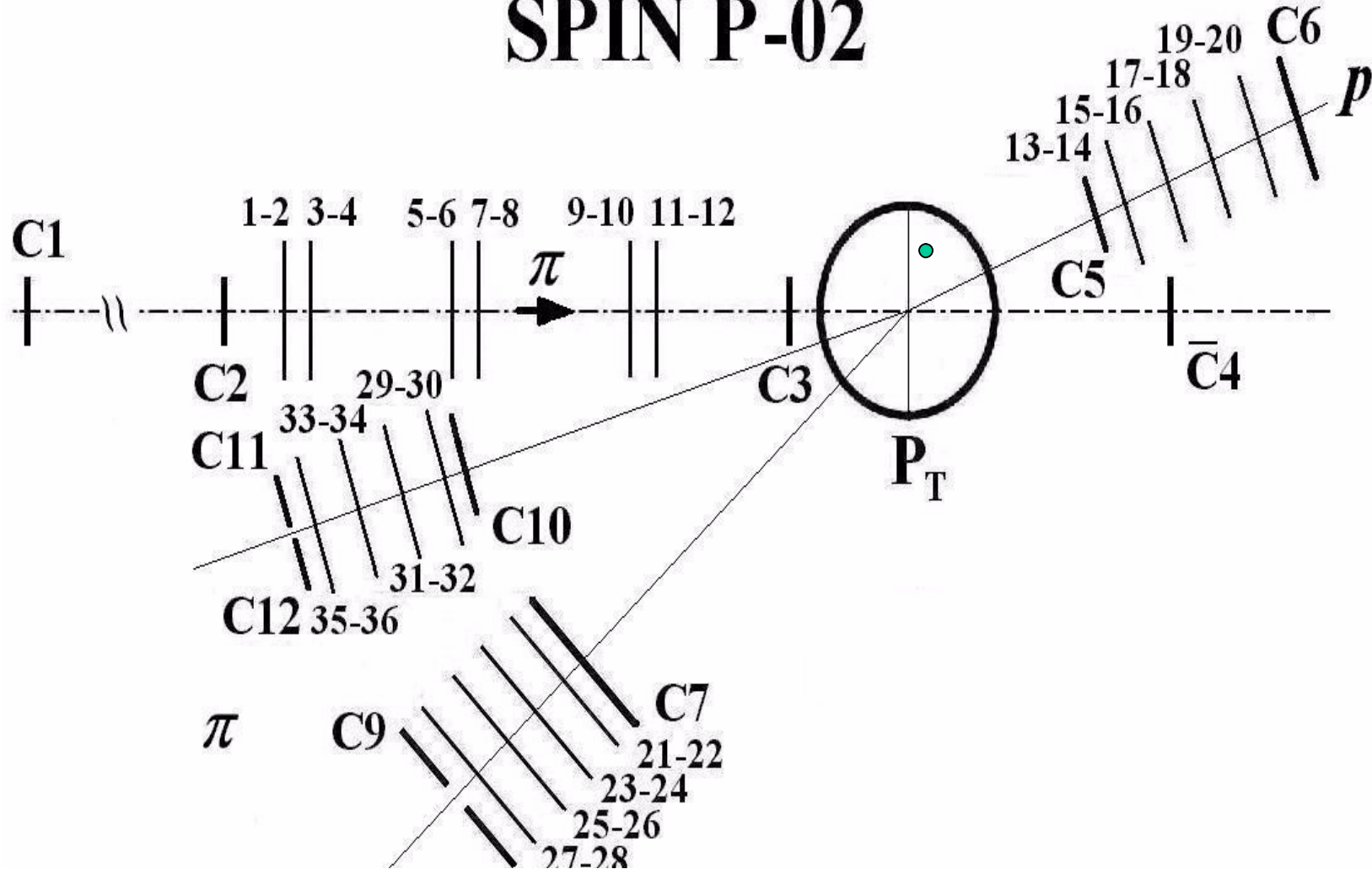
Параметр вращения спина $A(+)$. $A(+)$



Мировые данные до 2003 года.

FA02 766276 45874/23979 P+=21735/10468 P-=18932/ 9650 CX=
 Min/Max= -1.00/ 1.00

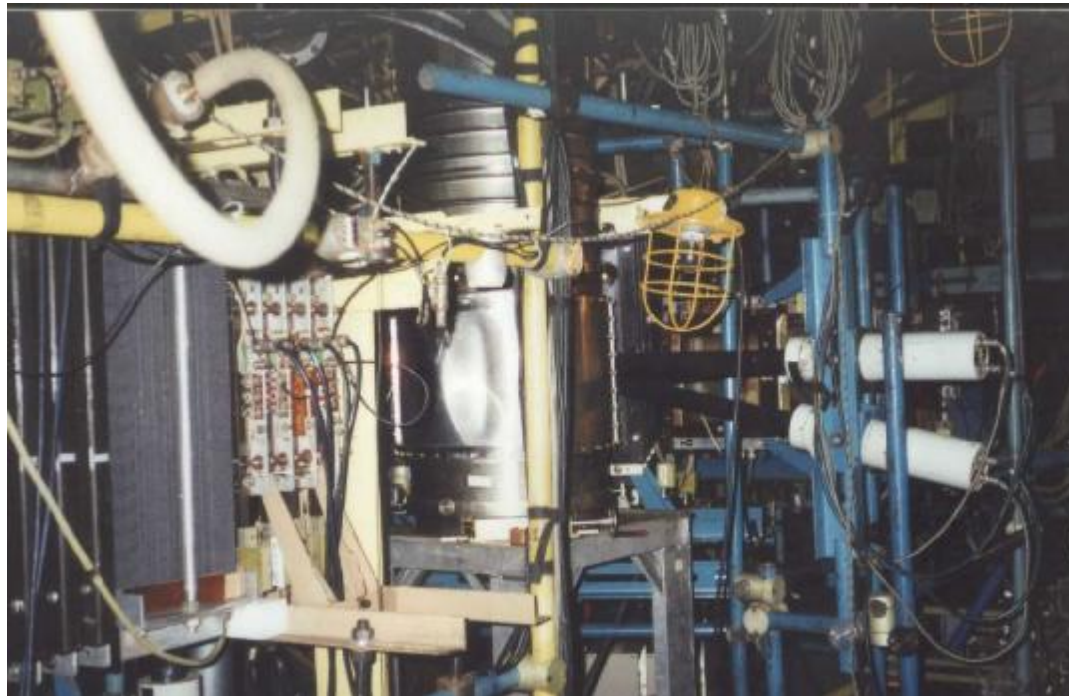
SPIN P-02



Лаборатория мезонной физики- 2003 год

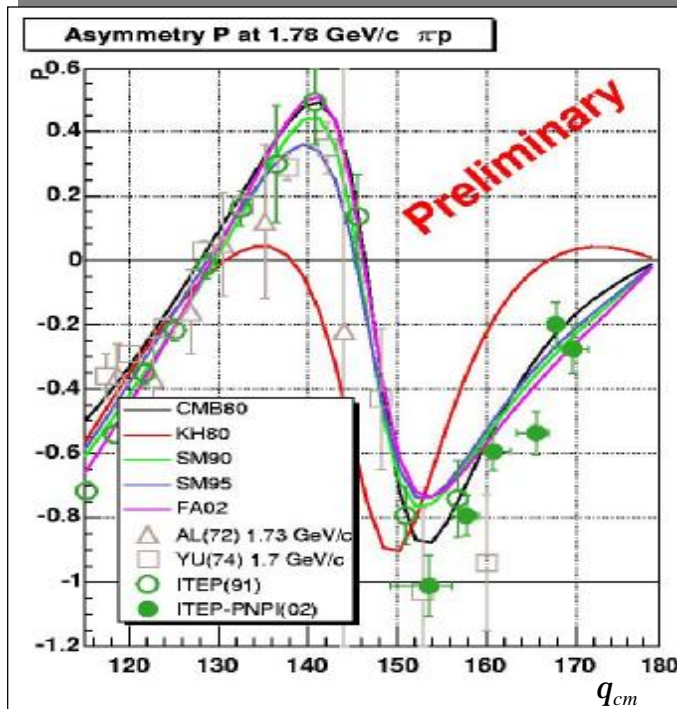
P(-)-2

Установка SPIN-P02 (ПЦЯФ-ИТЭФ).



Results: Asymmetry P at 1.78 GeV/c in p^-p

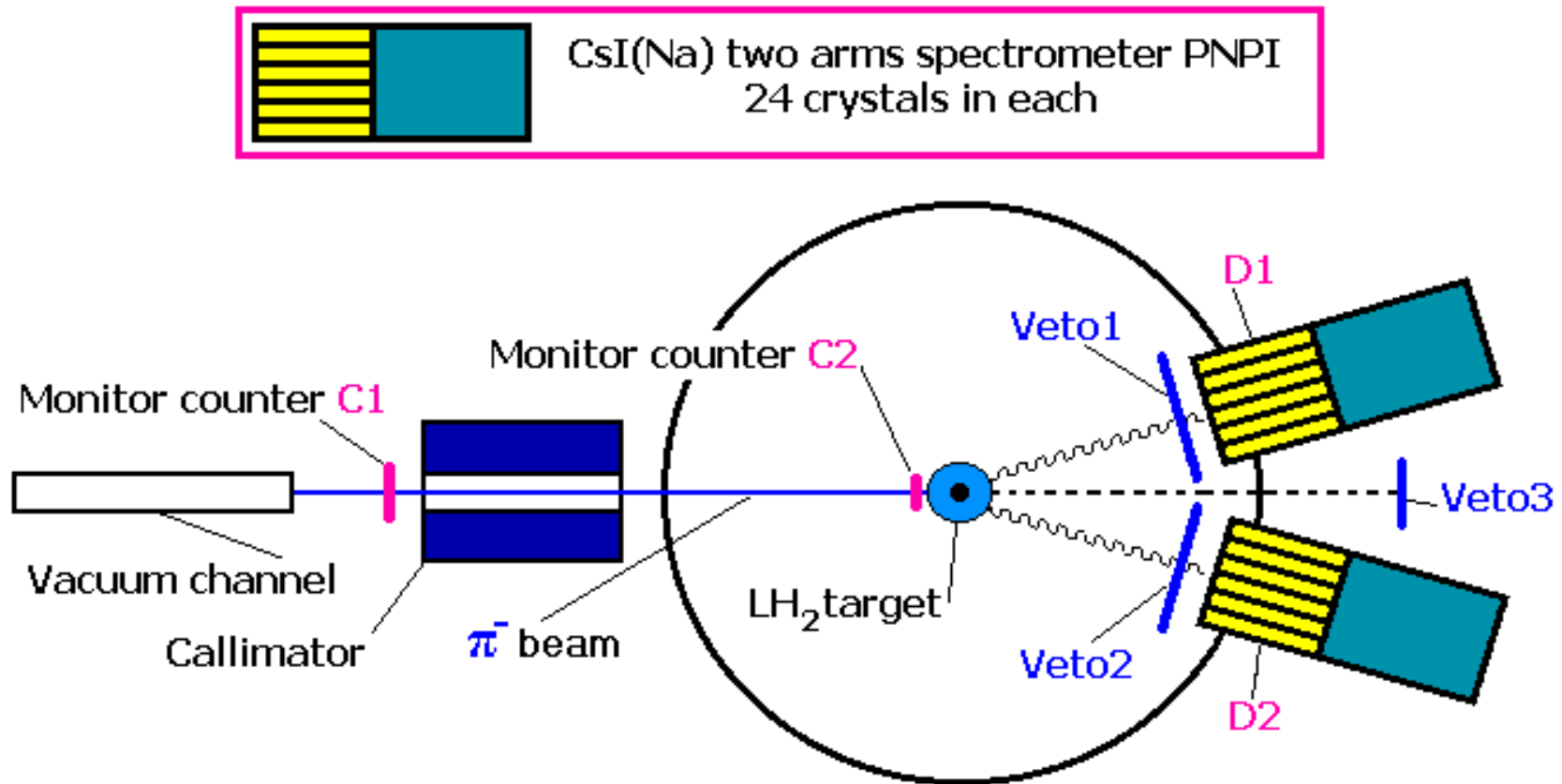
DUBNA-SPIN-13



- Ø Correspondence to CMB80 and VPI/GWU recent analysis
- Ø Significant deviation from KH80
- Ø Agreement with our previous data

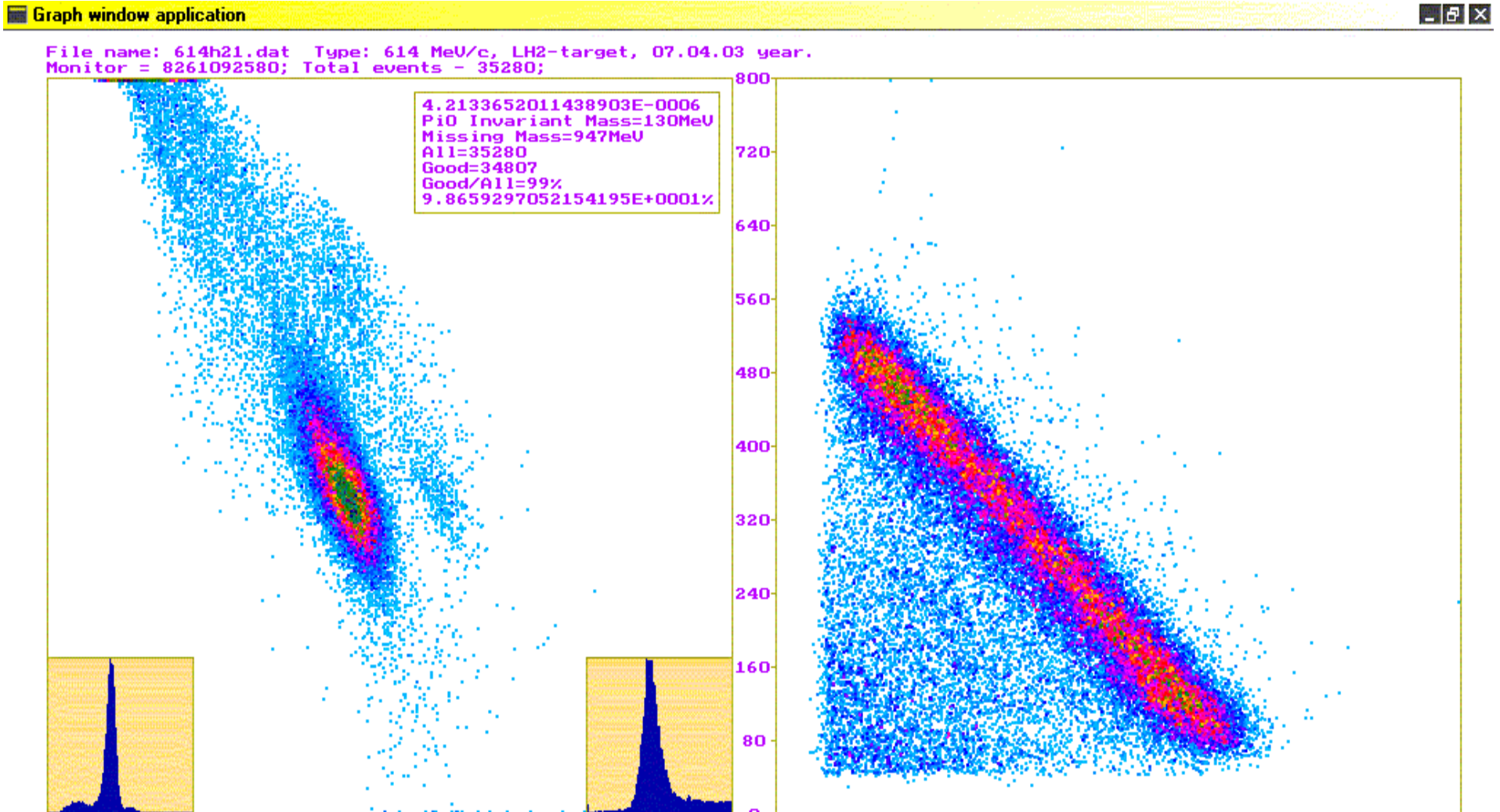
Результаты измерений 2003 года
(ПЦЯФ-ИТЭФ)

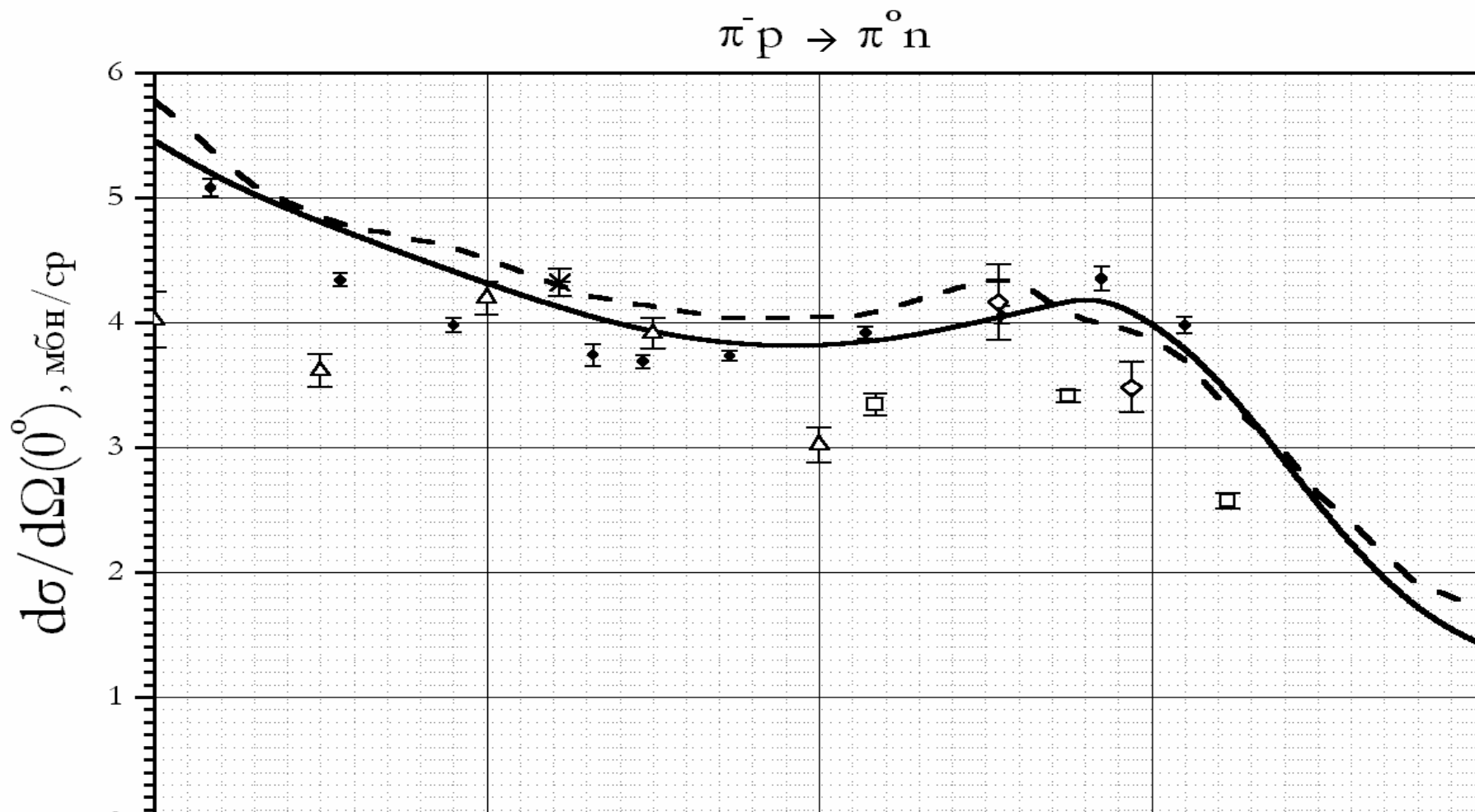
Схема установки (ПИАФ)



Trigger is **C1&C2&D1&D2&Veto1&Veto2&Veto3**
for charge exchange reaction

Распределение событий, $\pi(-)p - \pi(0)n$ ПИАФ-2





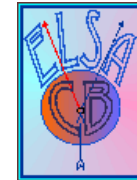
CB-ELSA-Project



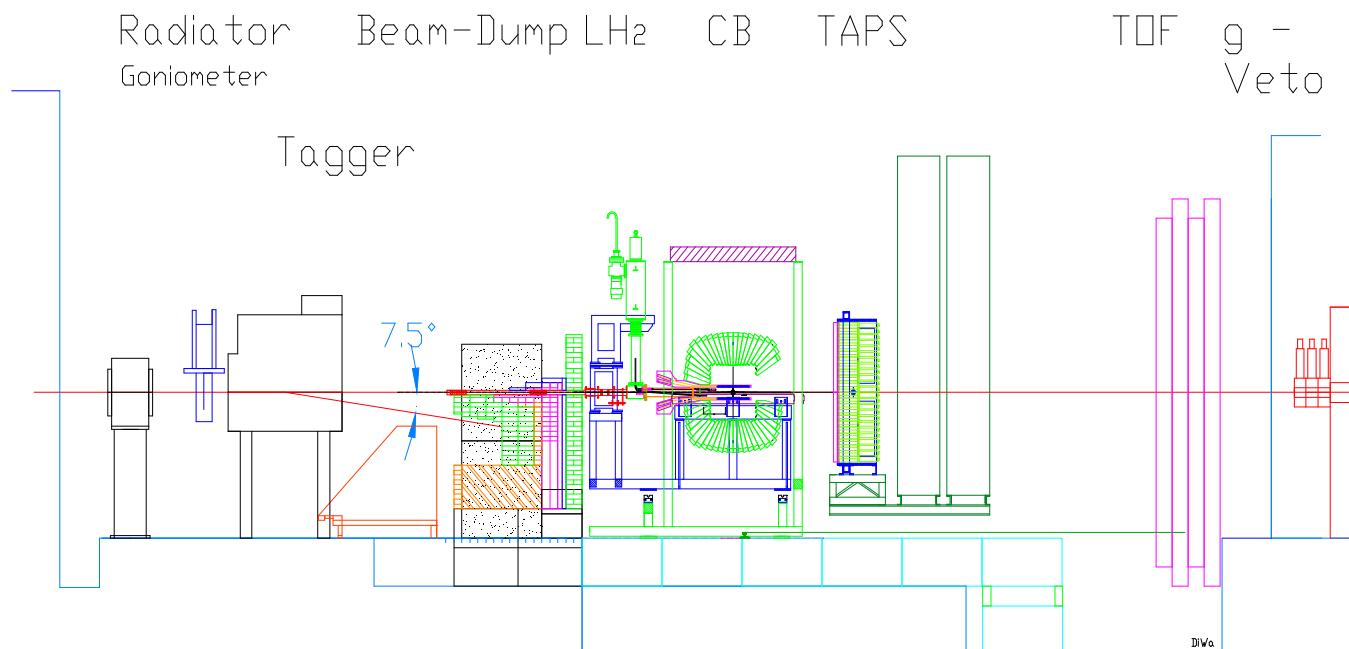
I Main Concept

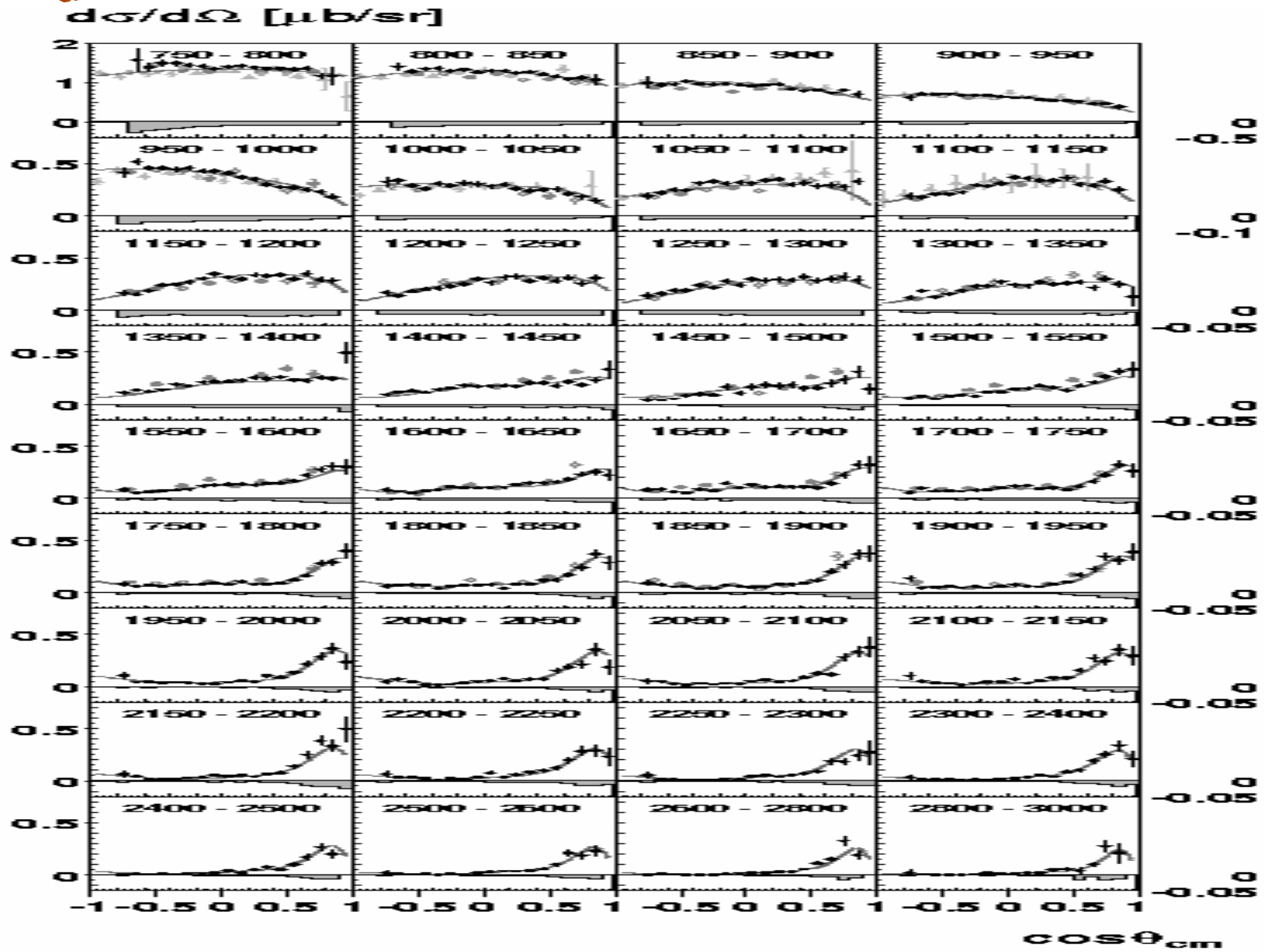
- » Exploration of Reactions $p g \rightarrow (pX) \rightarrow p n p^0, p n g$
- » 4p Detector for Photon's up to 1.2 GeV
- » Possible Energy Range from 600 MeV \rightarrow 3.2 GeV
- » Photon flux up to 10^8 / sec
- » Possible Polarisation Experiments with Polarised Photons and Polarised Targets
- » Combination of different Forward Detectors possible
 - TAPS (500 BaF₂-Crystals for Photon Detection)
 - EMS (Magn. Spectrometer for Proton Detection in forward Direction and Electron Scattering Experiments)

CB-ELSA-Project

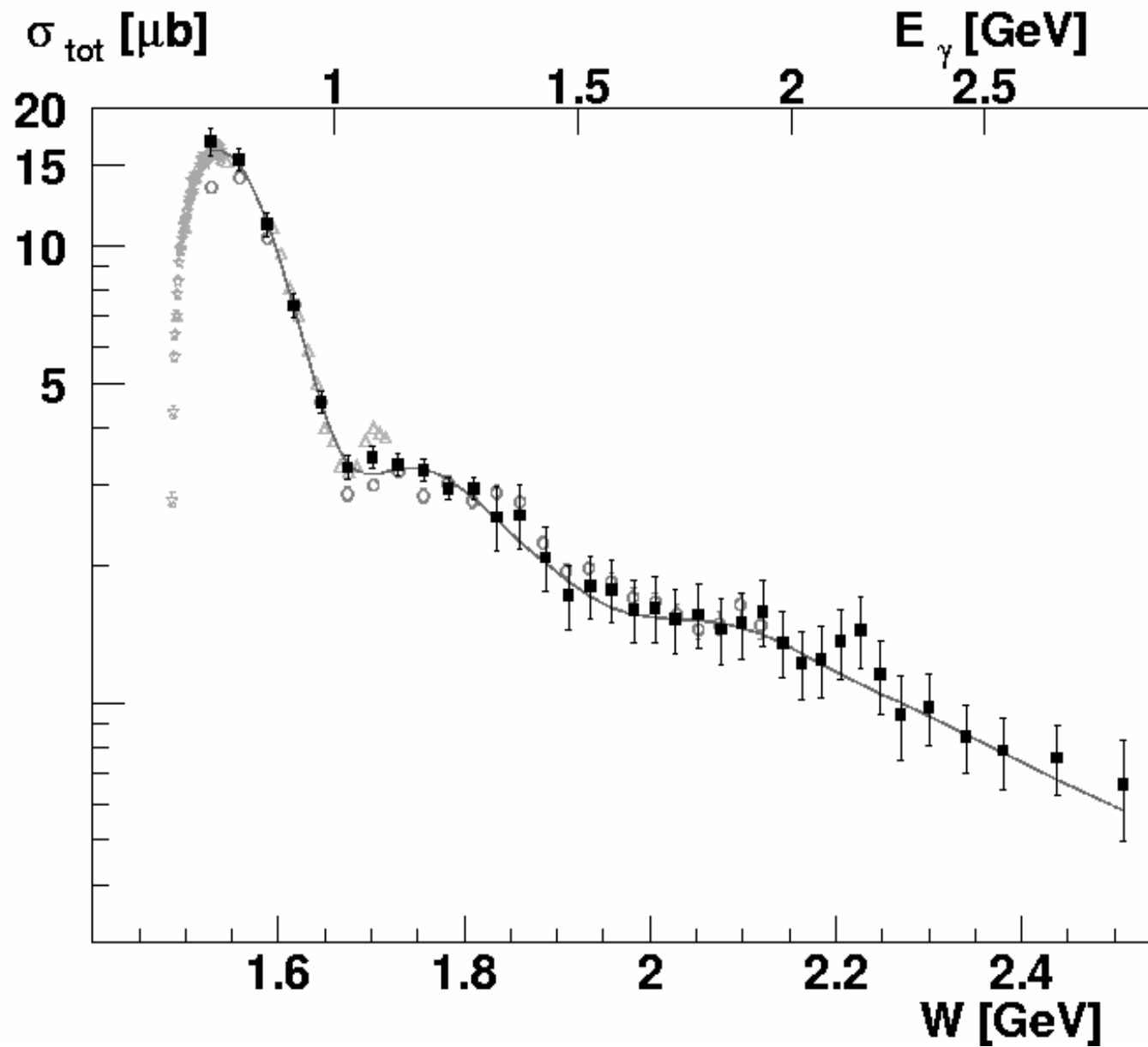


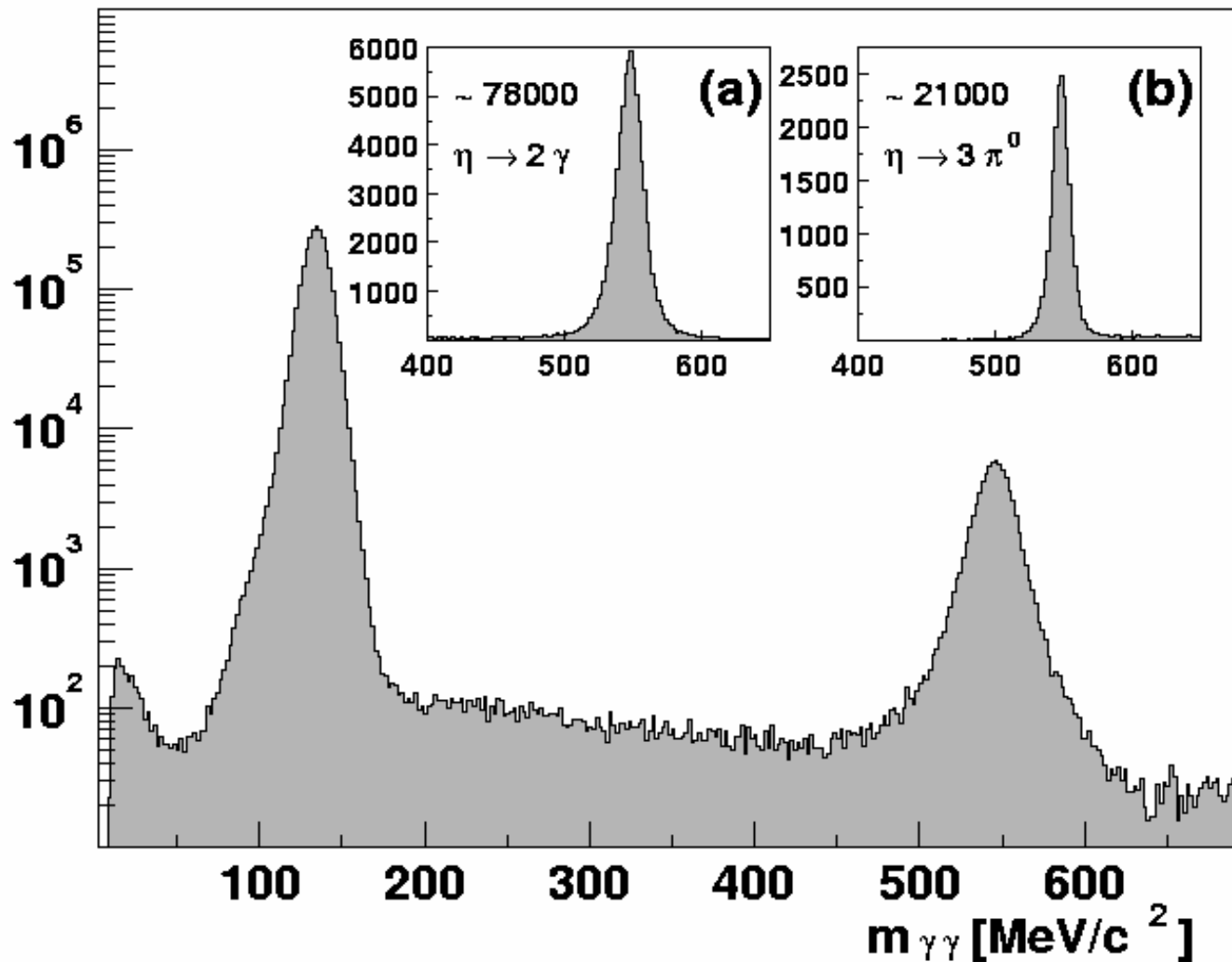
Present Configuration





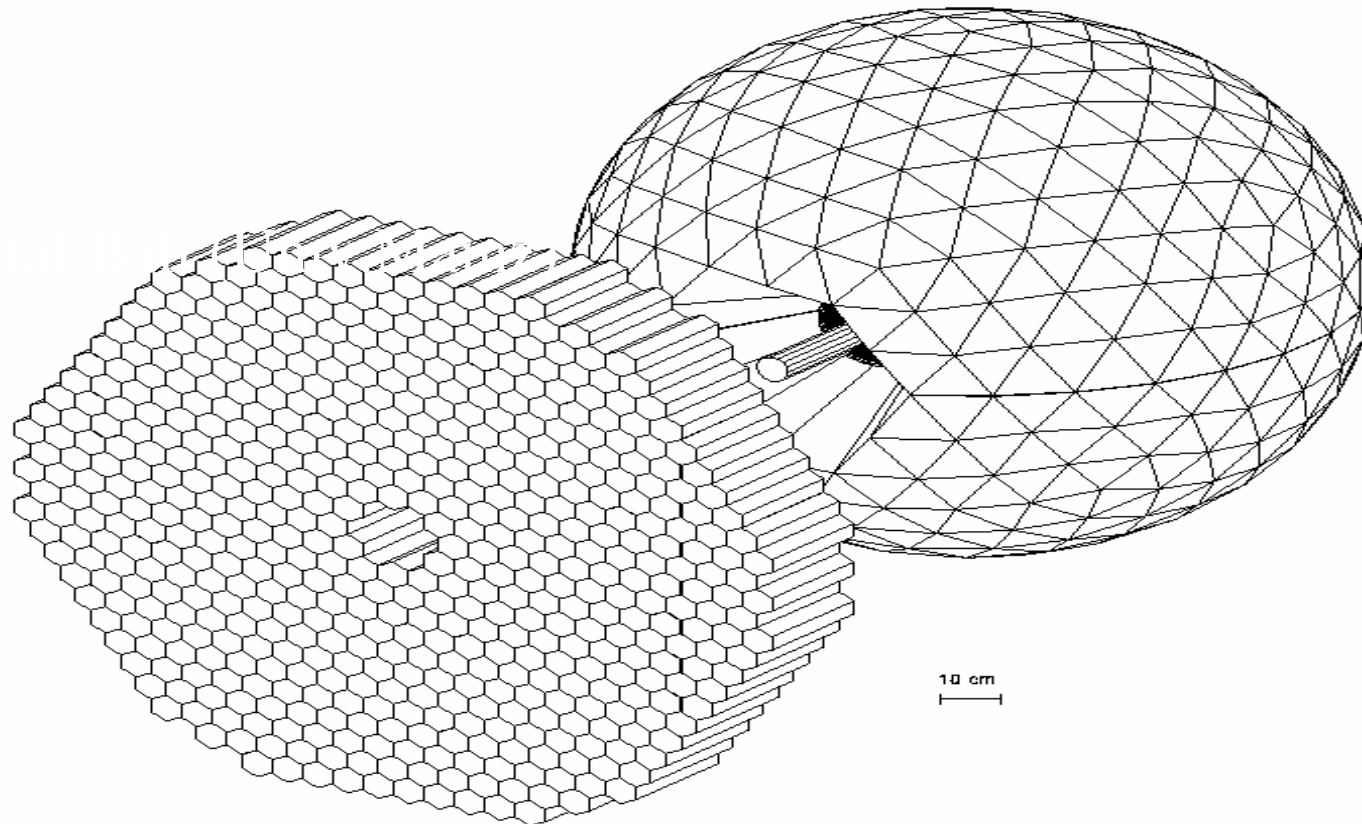
CB-E-4



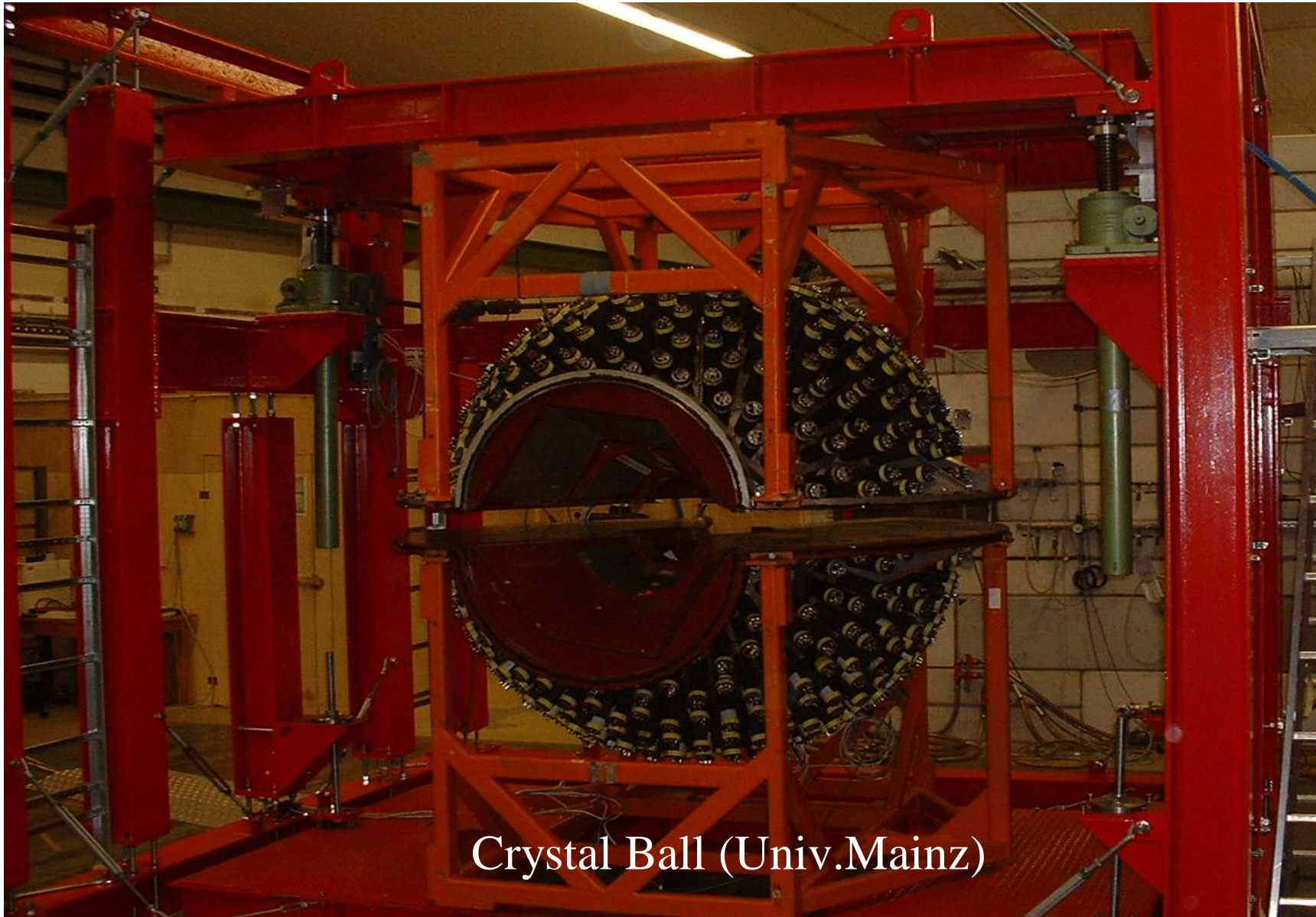


Лаборатория мезонной физики - 2003 год

CB-M-1



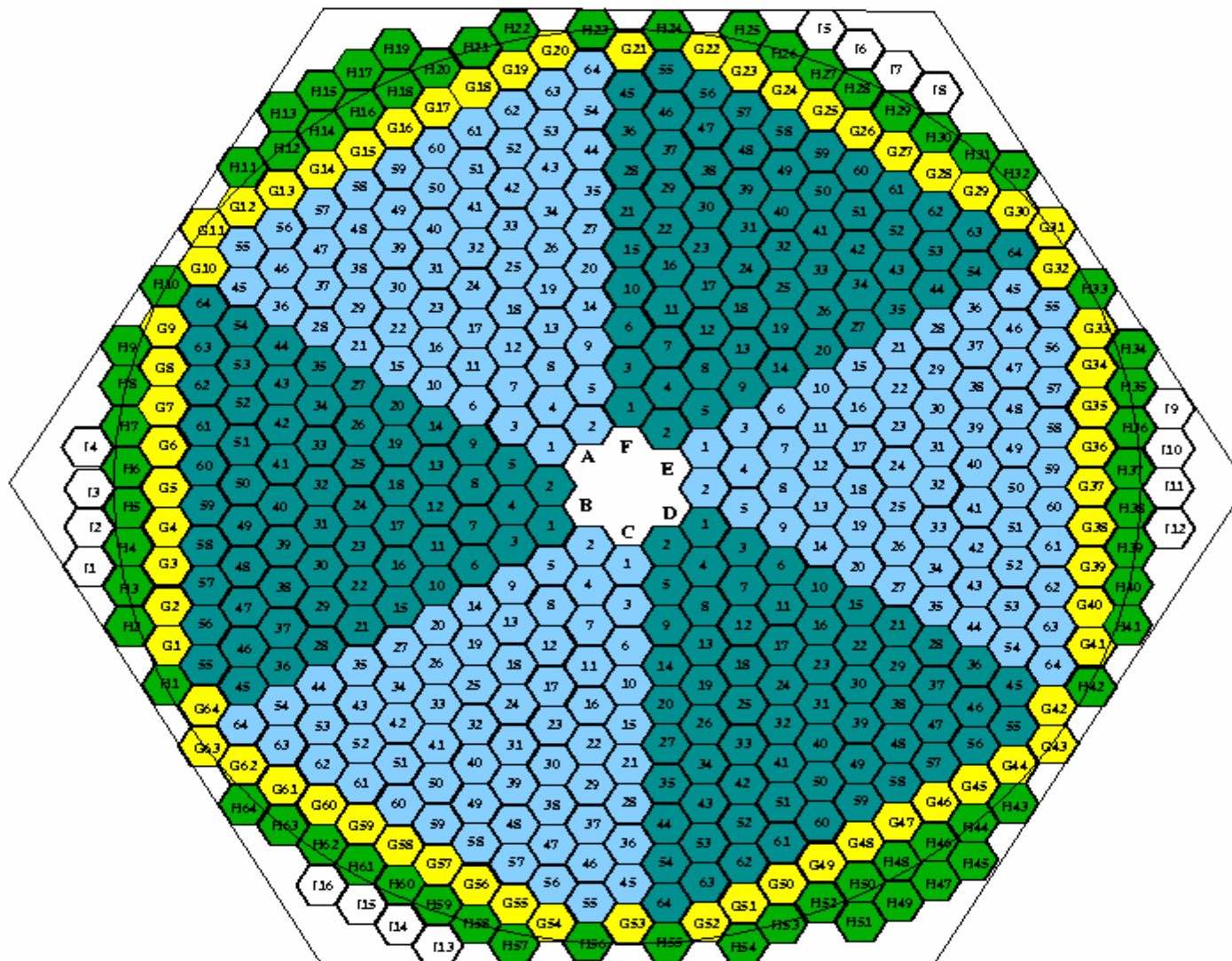
Crystal Ball (Univ.Mainz)



Crystal Ball (Univ.Mainz)

TAPS@ELSA 2001as seen from TARGET

July 2001 2001

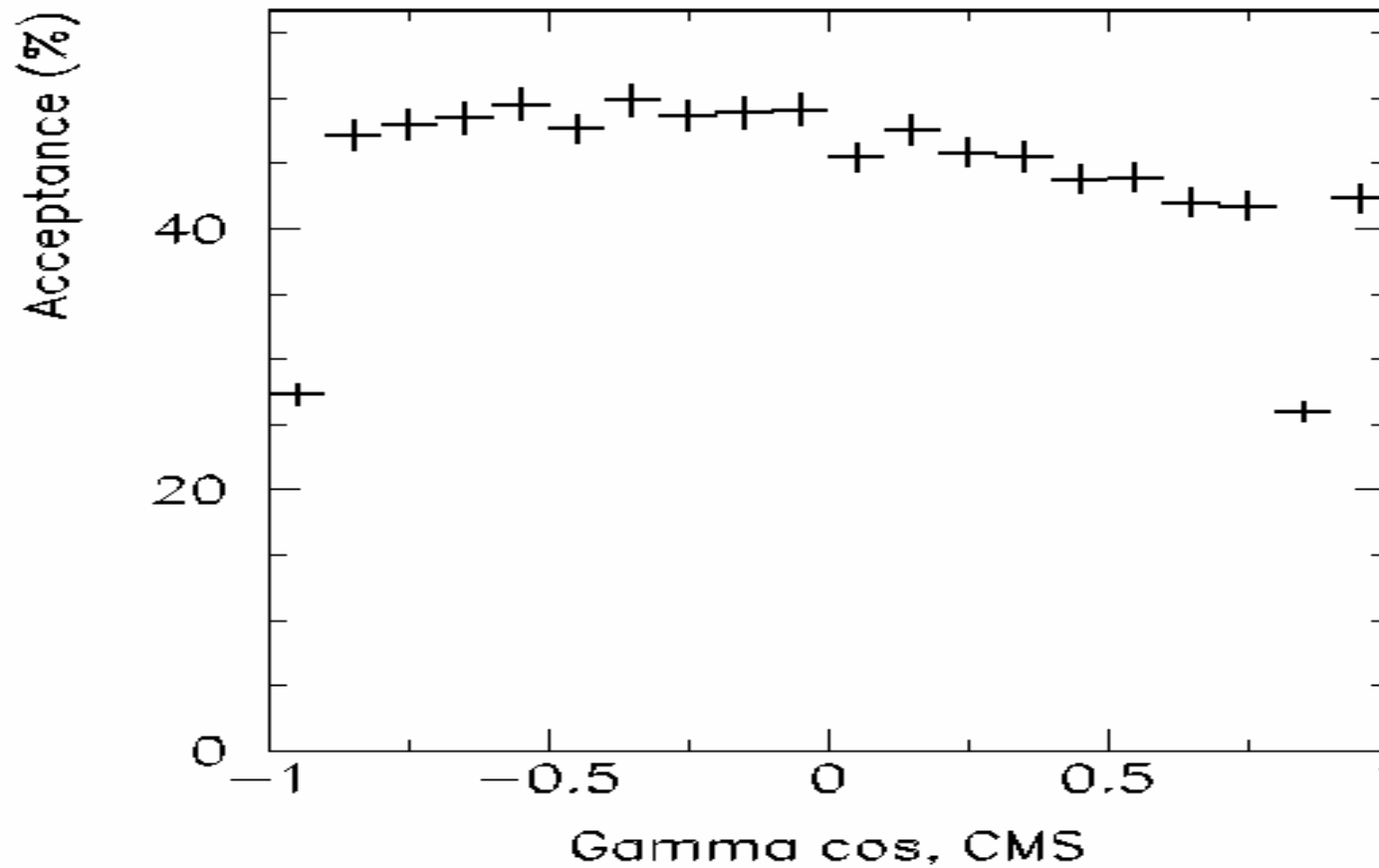


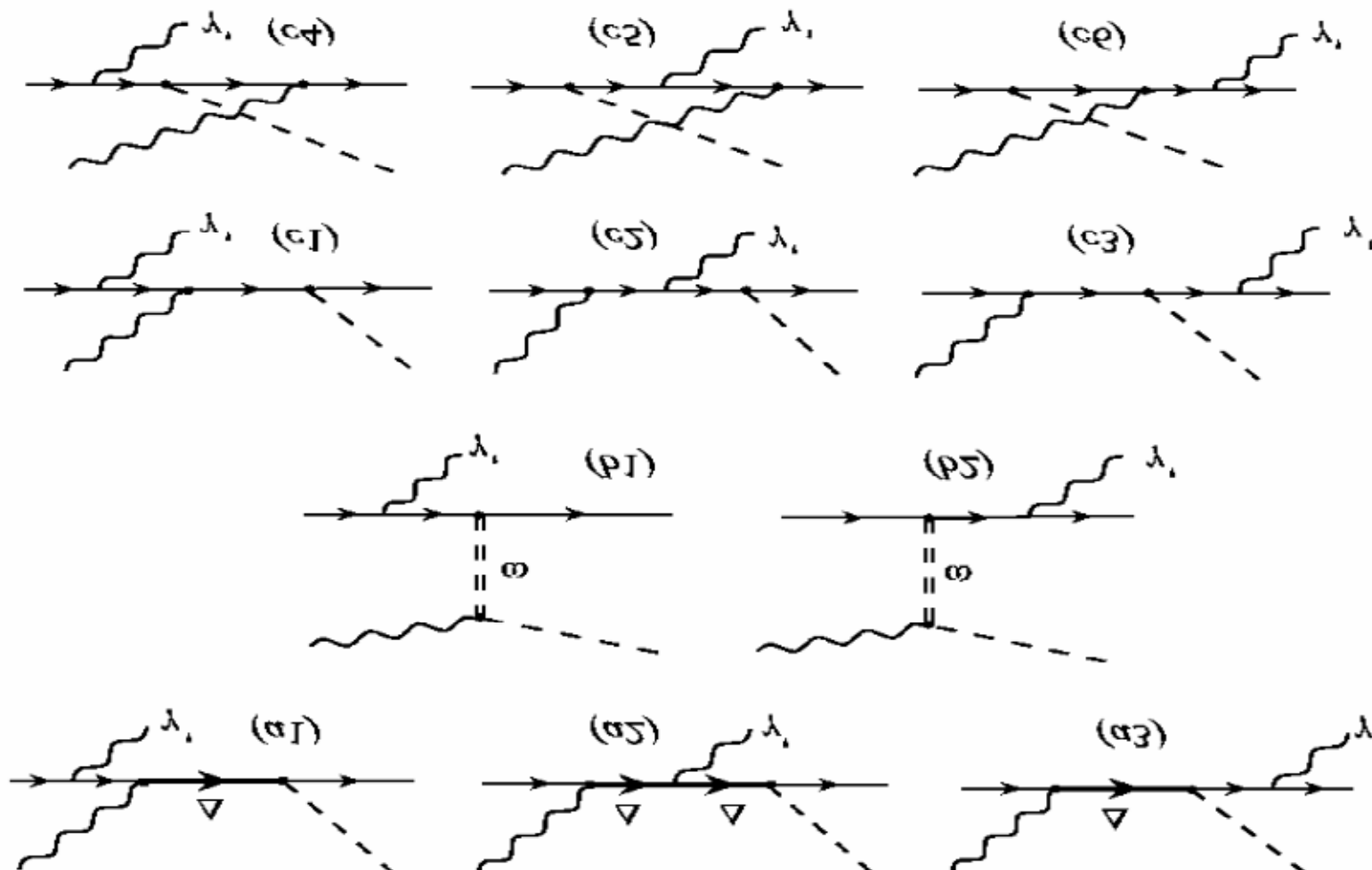
Crystal Ball (Univ.Mainz)

Лаборатория мезонной физики - 2003 год

CB-M-4

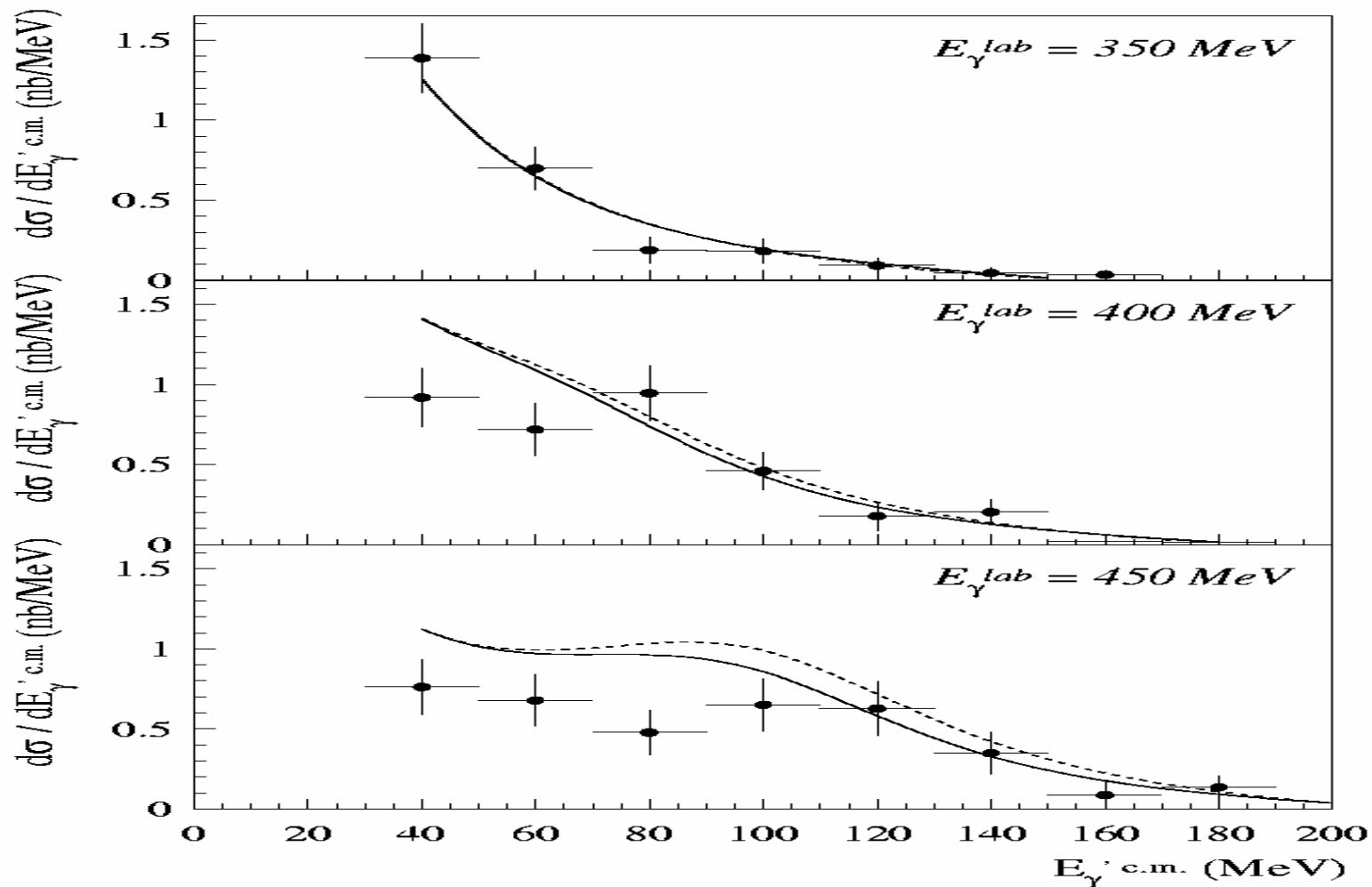
Crystal Ball (Univ.Mainz)





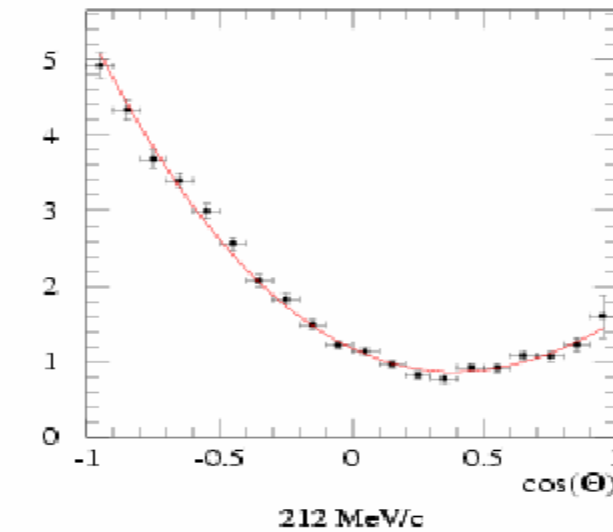
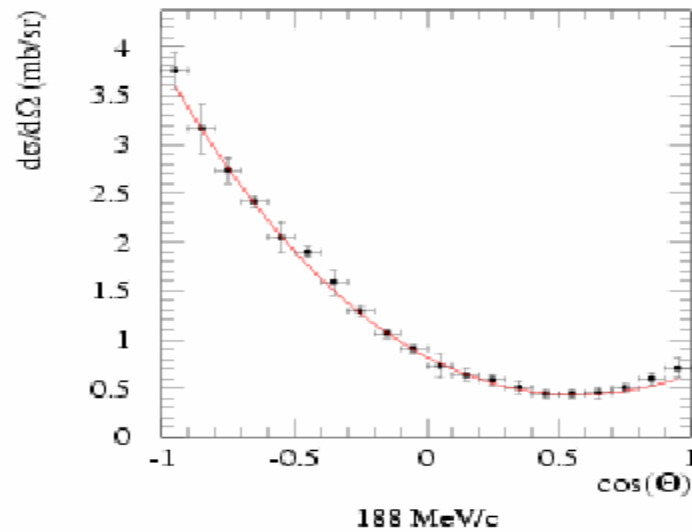
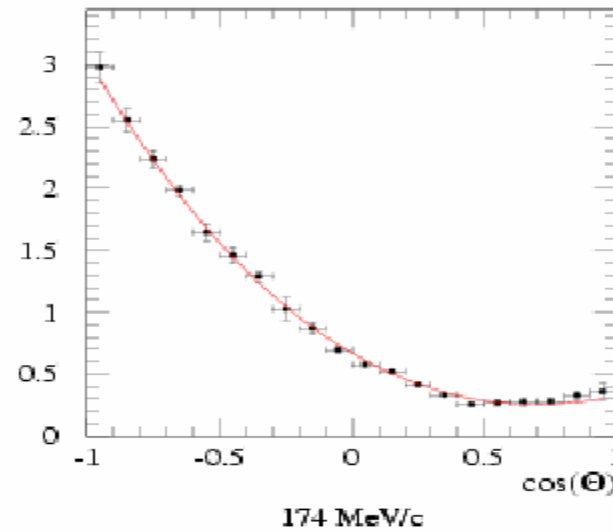
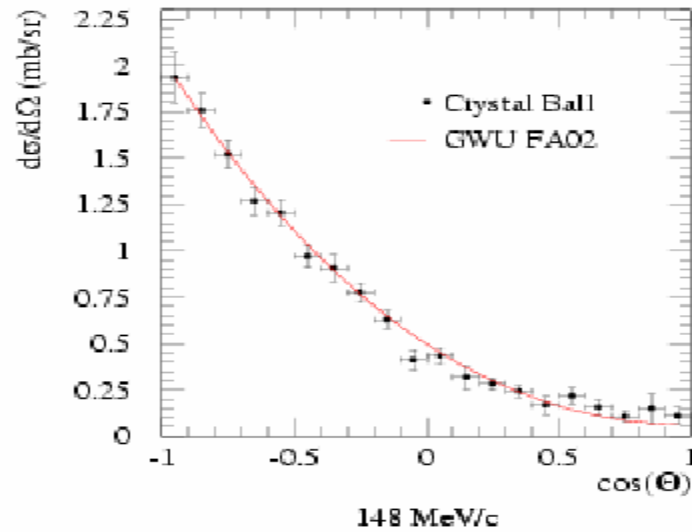
Crystal Ball (Univ.Mainz)

$$\gamma p \rightarrow \gamma \pi^0 p : \kappa_{\Delta^+} = 0,3$$



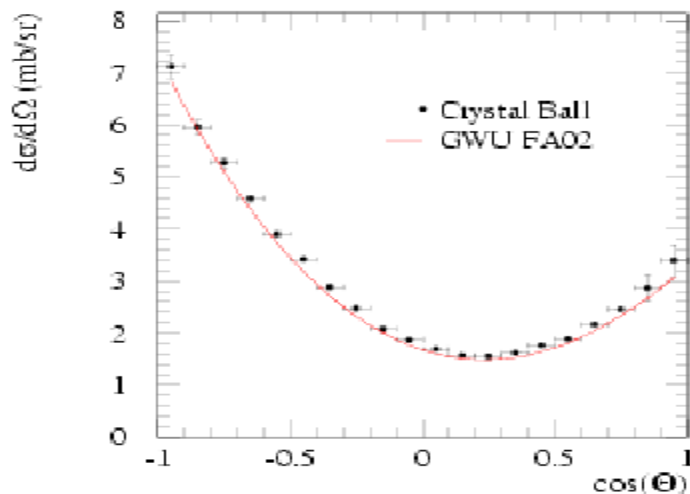
Crystal Ball (Univ.Mainz)

Differential Cross Section

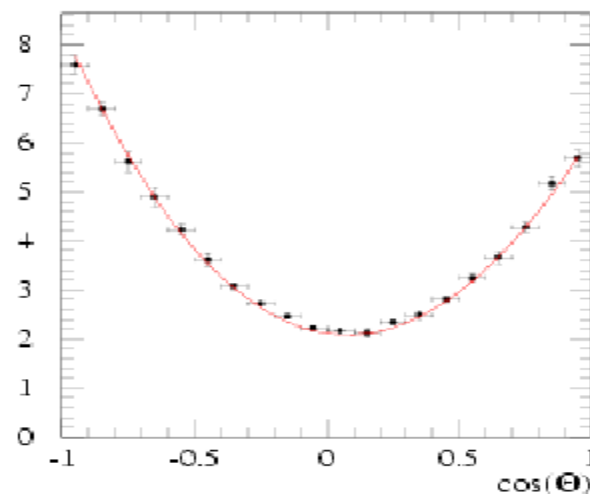


Crystal Ball (BNL)

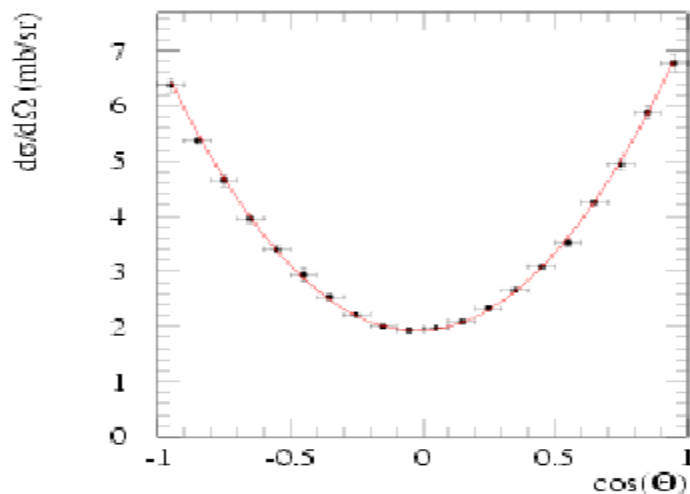
Differential Cross Section



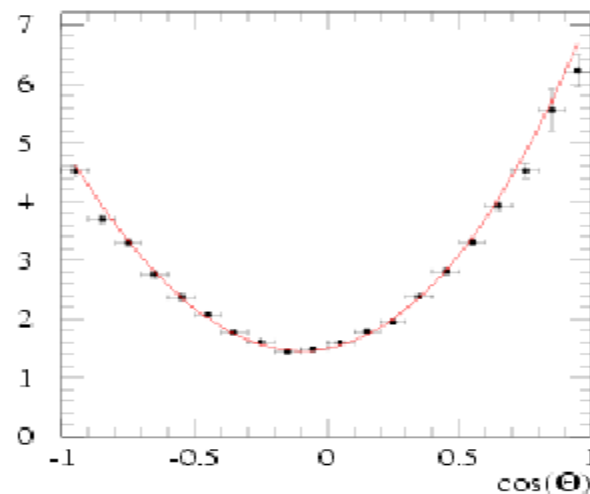
238 MeV/c



271 MeV/c

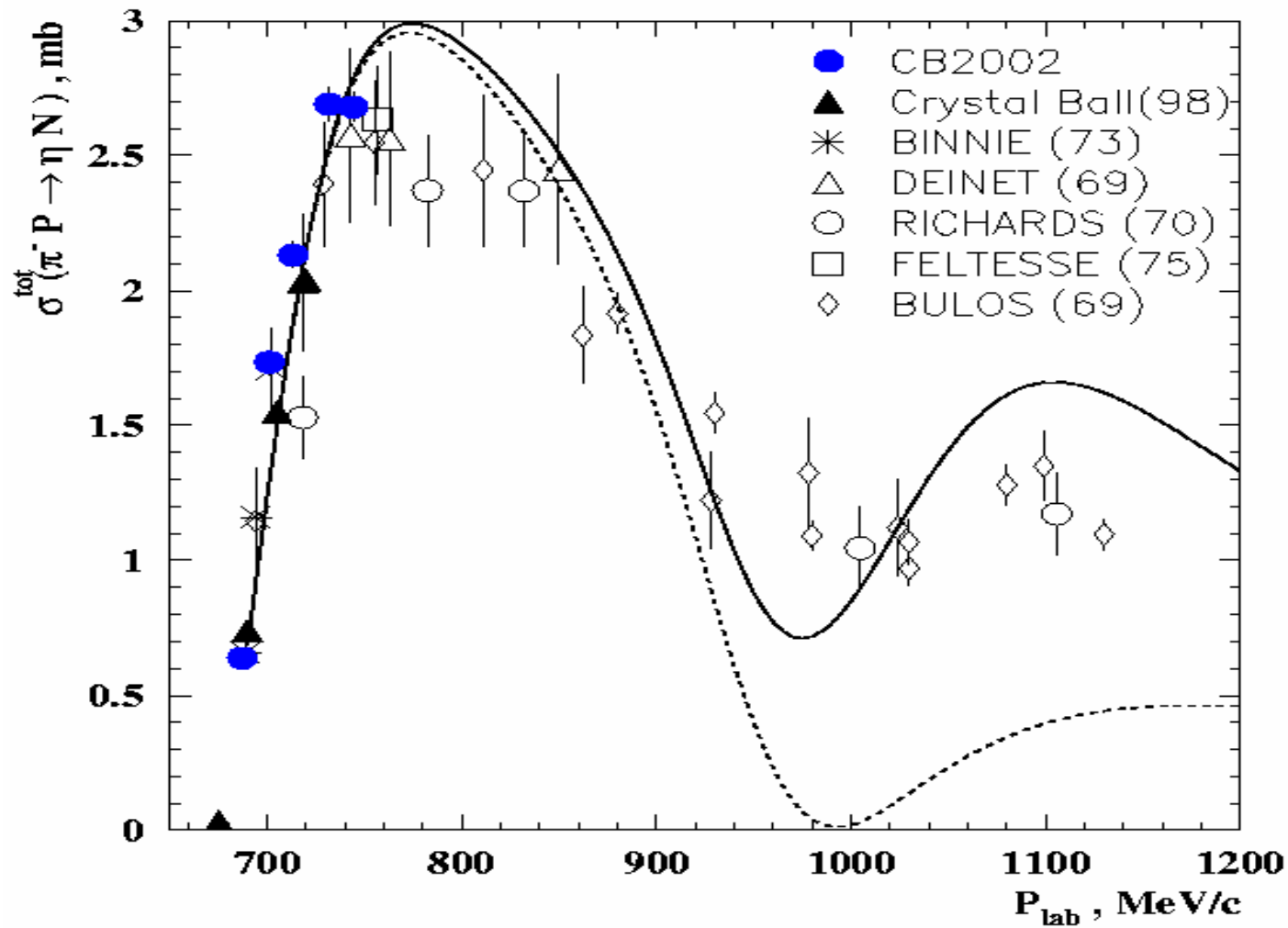


298 MeV/c



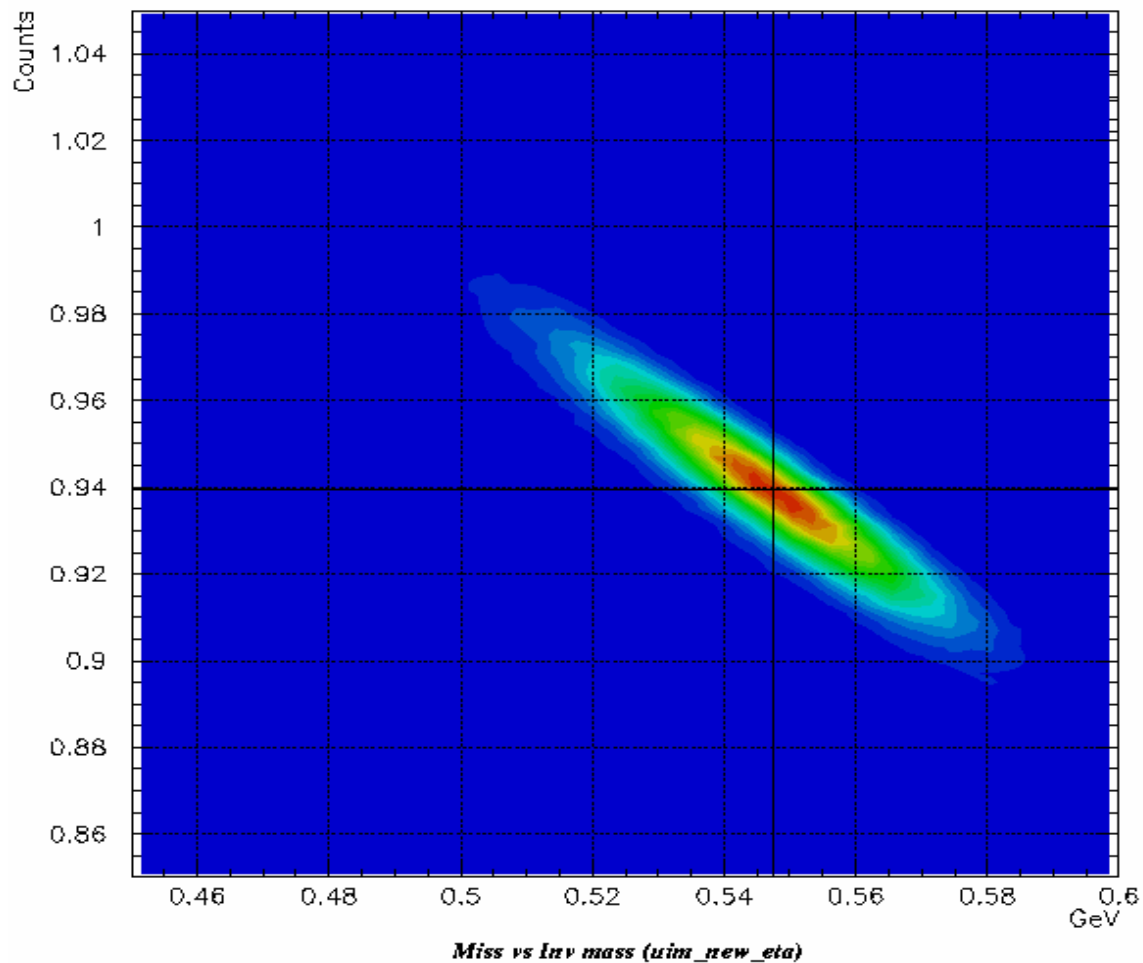
323 MeV/c

Crystal Ball (BNL)



Exp 913

2003/06/28 23.44



Crystal Ball (BNL)

J-PARC-1

Project for J-PARC (Japan).

In Tables 1 and 2 we present limited intervals of kinematic variables for the second resonance region of πN elastic scattering, which cover masses of baryon resonances from 1400 to 2000 MeV. The intervals were determined by analyzing zero trajectories of πN transverse amplitudes obtained for three existing global PWAs: KA84, CMB and VPI solution SM95. In column 2 and 3 those intervals of lab. pion momentum and c.m.s. scattering angle are indicated, in which the existence of discrete ambiguities is mostly probable and, hence, measurements of the spin rotation parameters A and R in pion-proton elastic scattering are needed on the first turn.

Expected counting rates can be estimated using values of c.m.s. differential cross sections given in column 4. A statistic precision at a level of $(\Delta)A \sim 0.1$ or $(\Delta)R \sim 0.1$ is enough to distinguish different PWA solutions.

Project for J-PARC (Japan)

Table 1: Elastic π^+p - π^+p scattering.
(Regions with presumed existence of discrete ambiguities.)

Number	Momentum region	Angle region	Diff. cross section
	: (MeV/c)	: c.m.s.(deg.)	: (mb/sr)
1	: 700 – 900	: 90 - 110	: 0.03 - 0.18
2	: 800 – 1000	: 155 – 175	: 0.08 – 0.60
3	: 800 – 1200	: 80 – 100	: 0.13 – 0.27
4	: 1600 – 1900	: 50 – 70	: 0.08 – 0.30
5	: 1800 – 2100	: 130 – 150	: 0.03 – 0.13

Project for J-PARC (Japan).

Table 2: Elastic $\pi^-p-\pi^-p$ scattering.
(Regions with presumed existence of discrete ambiguities.)

Number	Momentum region (MeV/c)	Angle region c.m.s.(deg.)	Diff. cross section (mb/sr)
1	600 – 800	60 - 80	0.06 - 0.20
2	600 – 800	100 – 120	1.0 – 1.4
3	1200 – 1400	150 – 170	0.30 – 0.53
4	1200 – 1500	60 – 80	0.05 – 0.23
5	1200 – 1500	90 – 110	0.25 – 0.40
6	1800 – 2100	140 – 150	0.002 – 0.010
7	2000 – 2100	130 – 150	0.001 – 0.003