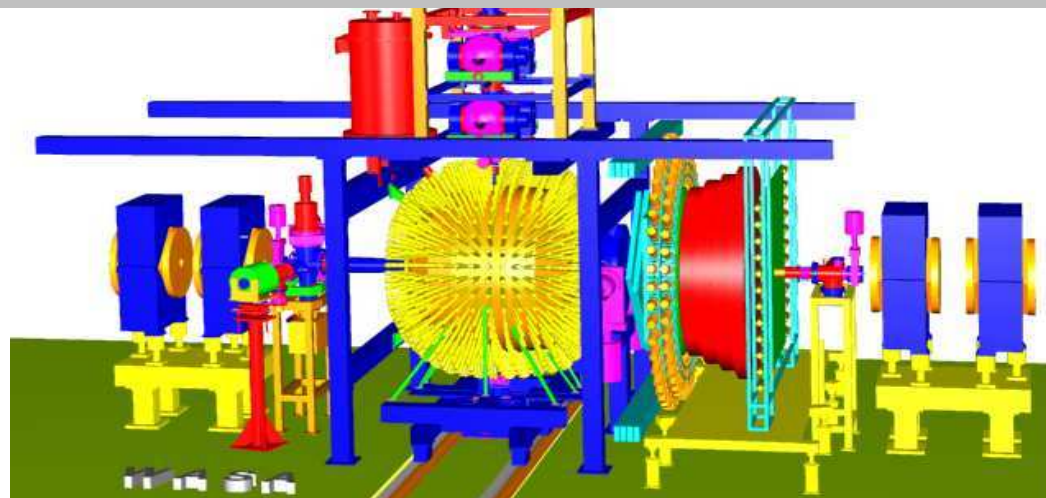




# Instalacja **WASA** at **COSY**

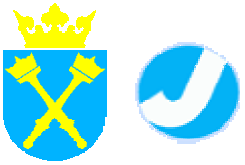


**Benedykt Jany**

Instytut Fizyki

Uniwersytet Jagielloński

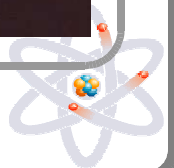
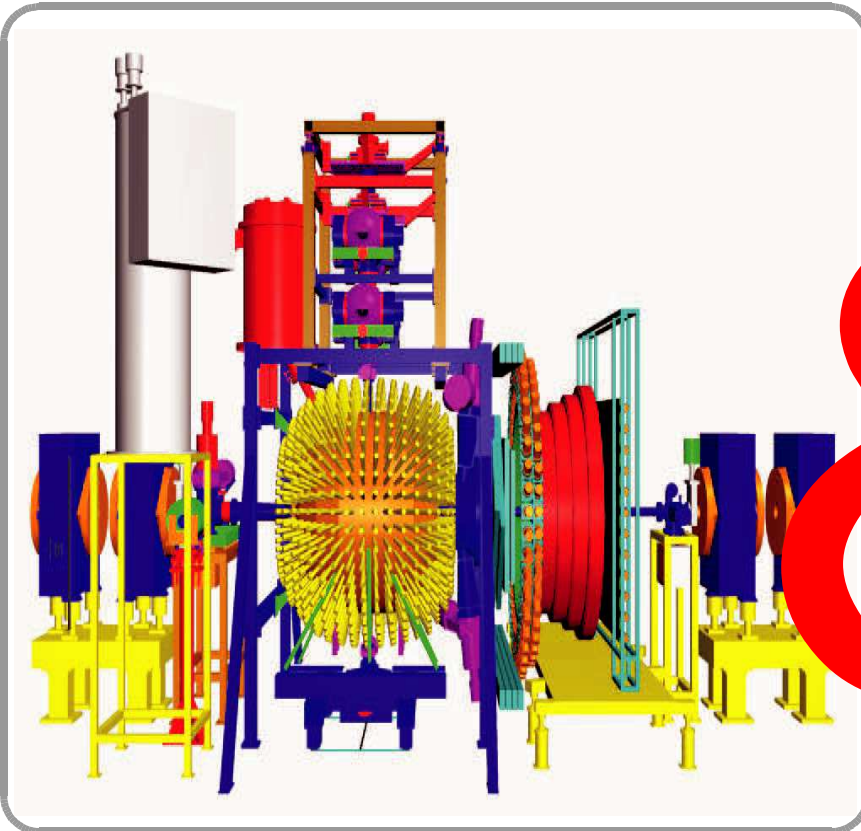


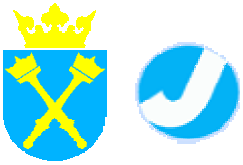


# Motywacje

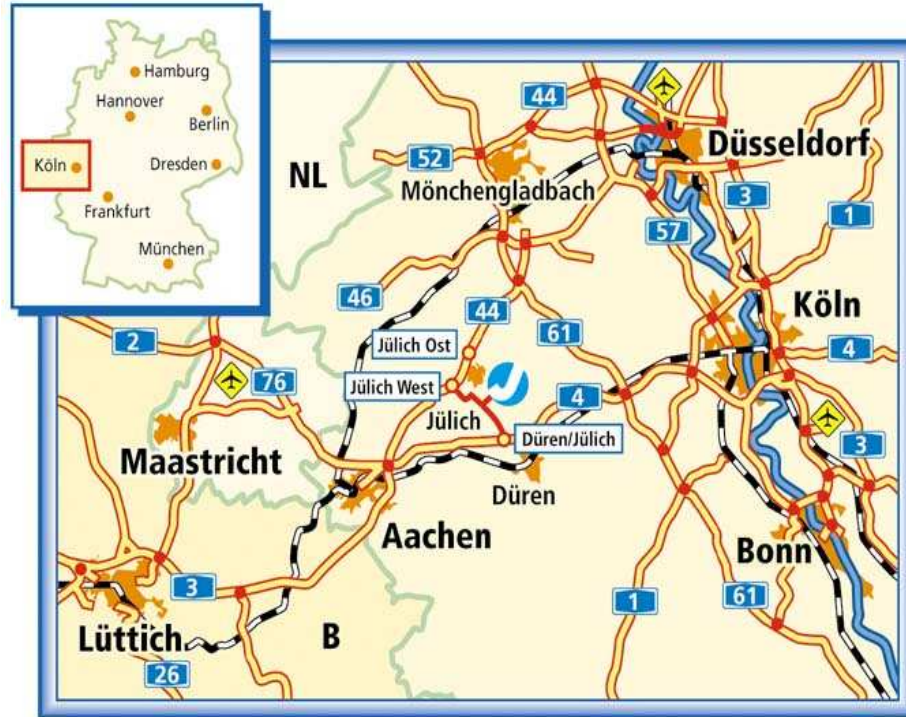
*Wide Angle Shower Apparatus*

**CO**oler **SY**nchrotron



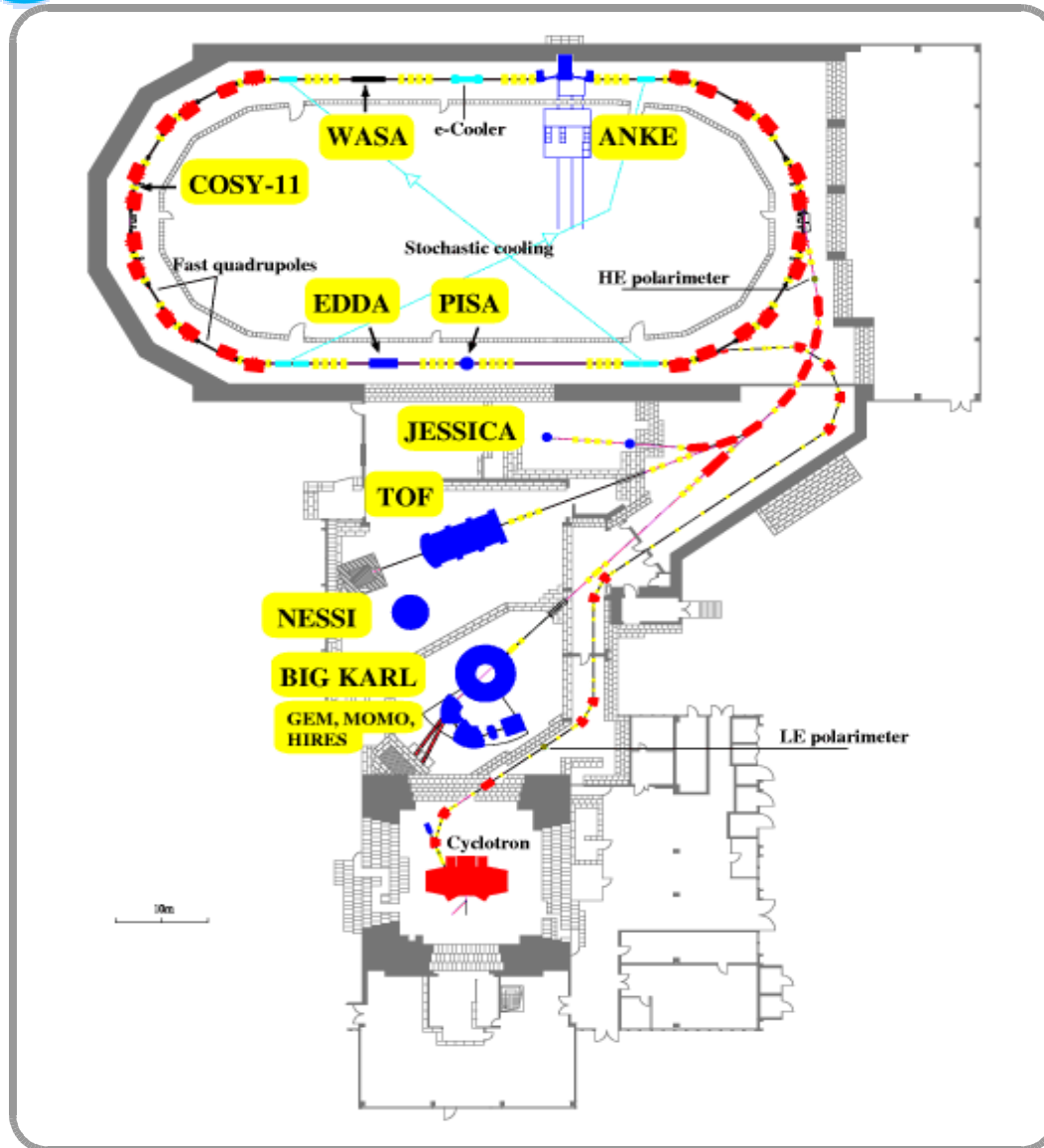


# Gdzie?





# Gdzie?



## COSY

COoler SYnchrotron

obwód 184m

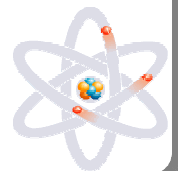
może przyspieszać protony  
do 96% c

pędy:

300-3700 MeV/c

energie:

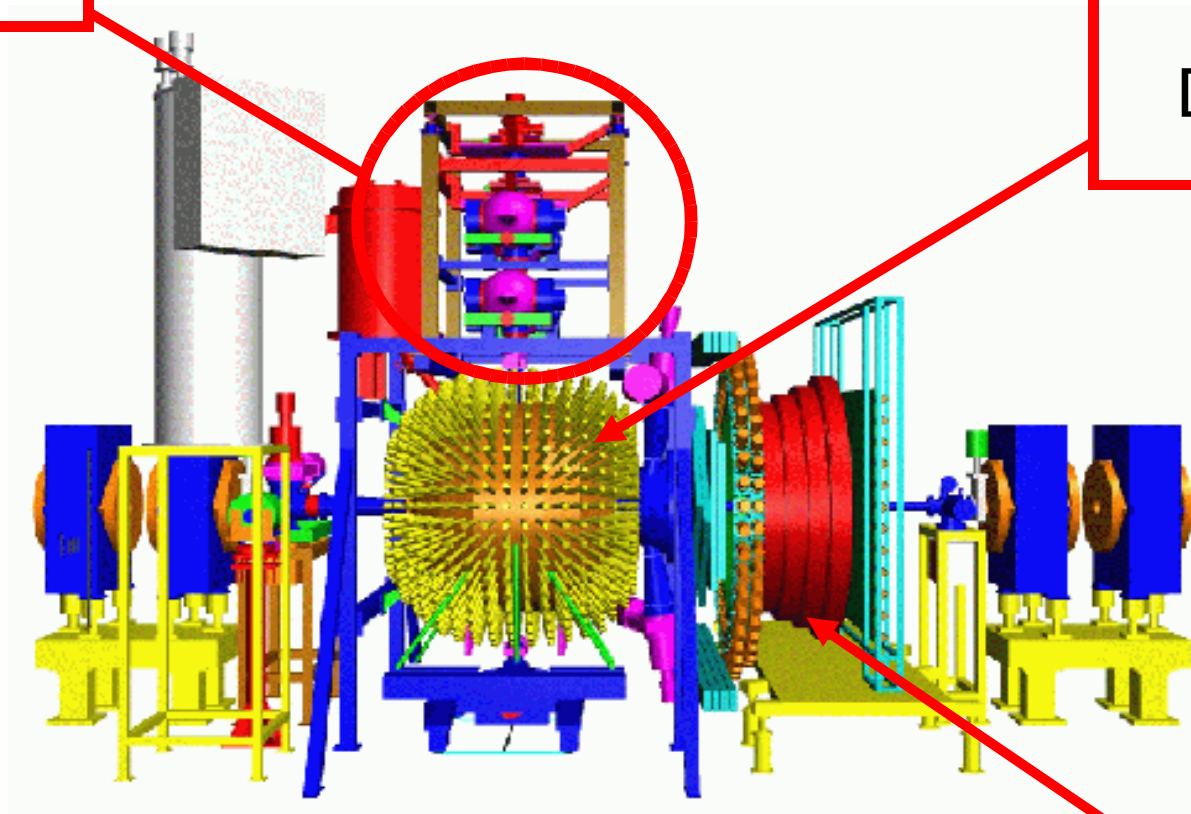
47-2879 MeV





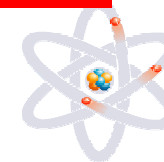
# Budowa Detektora

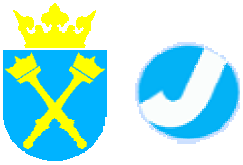
Pellettarget



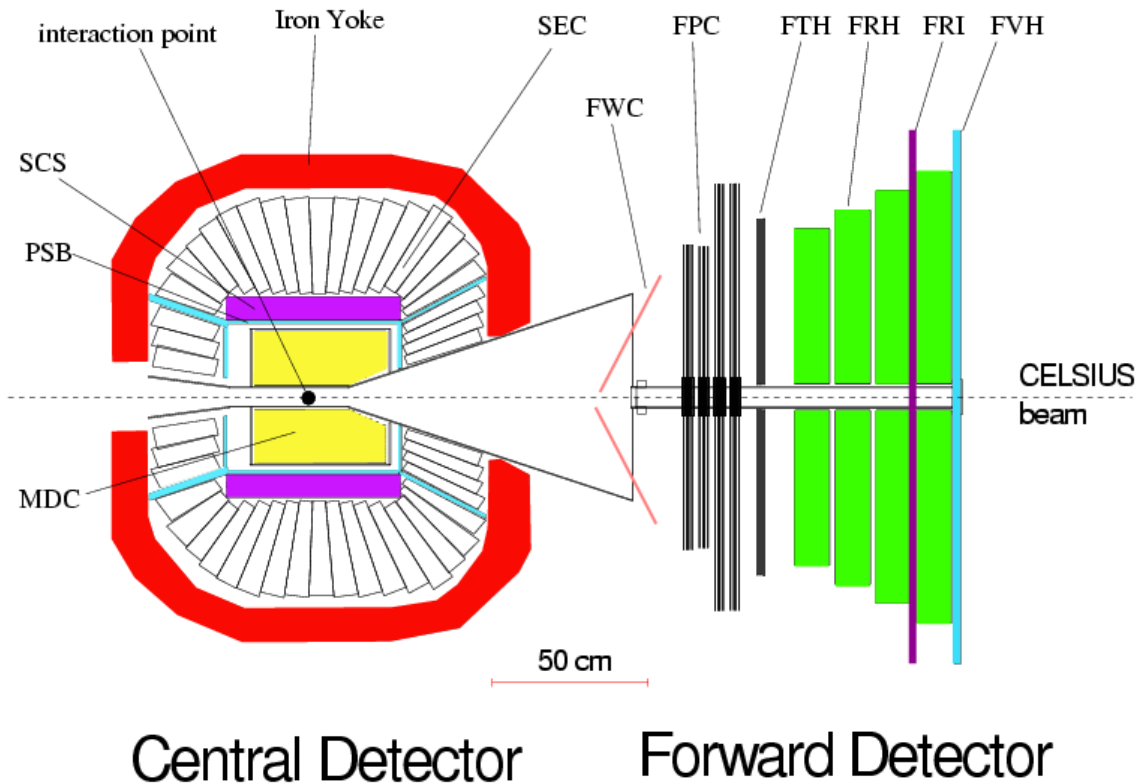
Central  
Detector

Forward Detector





# Budowa Detektora



## CD – Central Detector

SEC – Scintillator

Electromagnetic Calorimeter

SCS – Superconducting

Solenoid

PSB – Plastic Scintillator  
Barrel

MDC – Mini Drift Chambers

## FD – Forward Detector

FWC – Forward Window

Counters

FPC – Forward Proportional  
Chambers

FTH – Forward Trigger

Hodoscope

FRH – Forward Range

Hodoscope

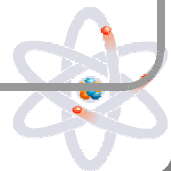
FRI – Forward Range

Intermediate

Hodoscope

FVH – Forward Veto

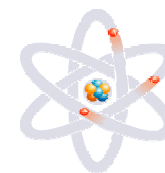
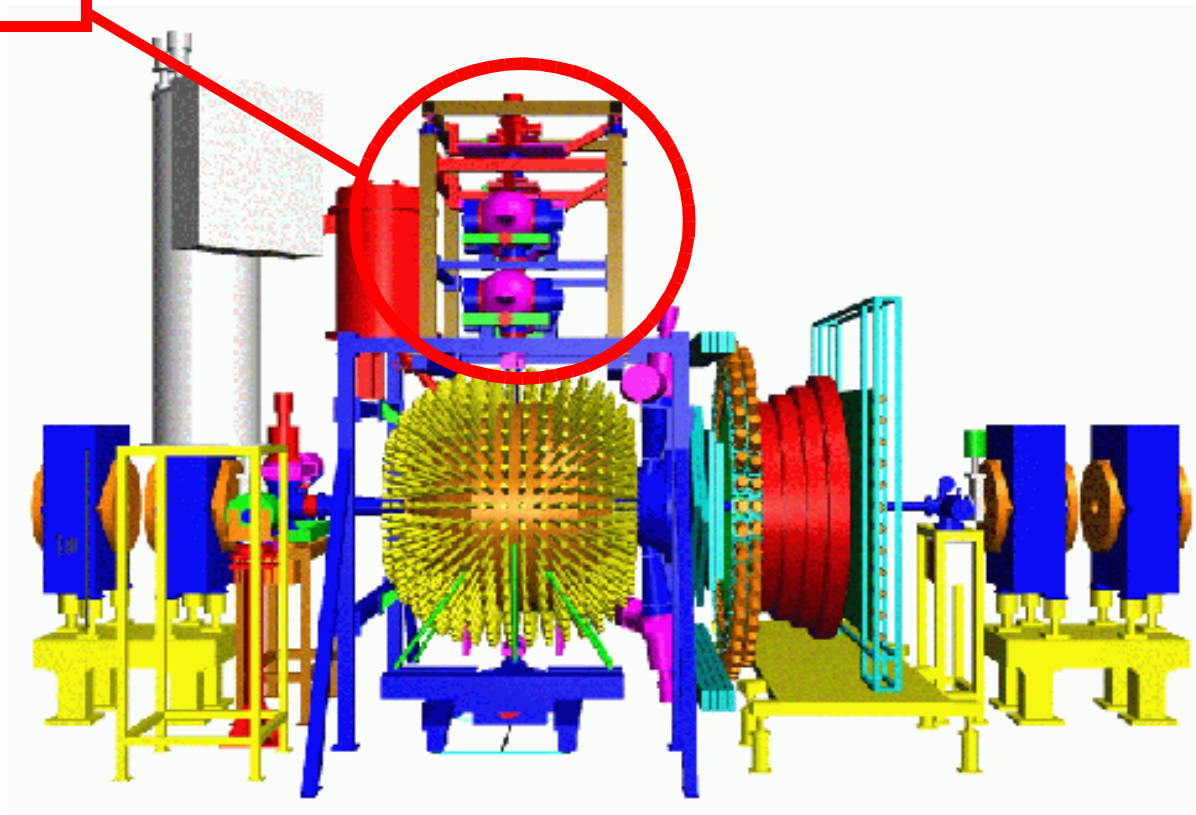
Hodoscope

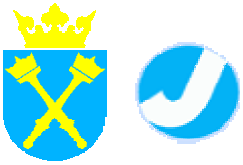




# Tarcza Pelletowa

Pellettarget





# Tarcza pelletowa

## tarcza pelletowa VS gazowa

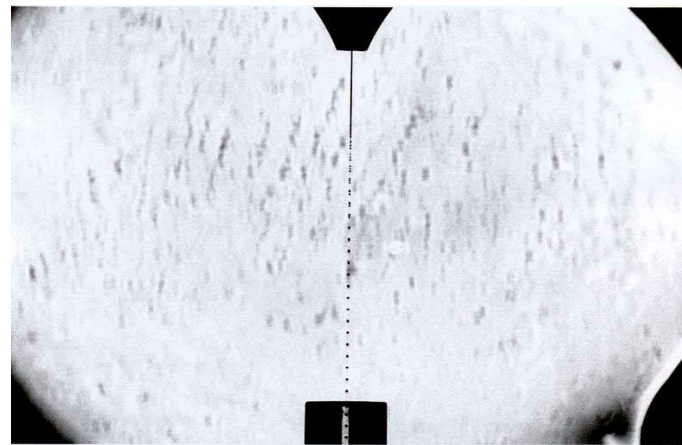
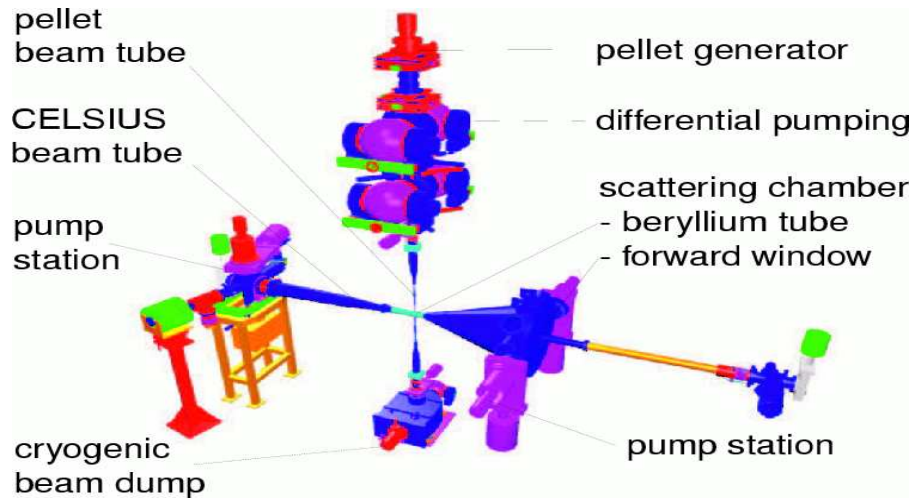
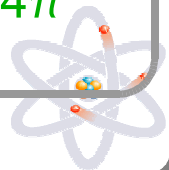
-> dobrze zlokalizowana tarcza

niewielkie prawdopodobieństwo wtórnych oddziaływań wewnątrz tarczy

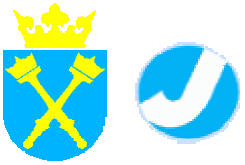
-> duża grubość tarczy  
duża luminosy przy rozsądnych czasach życia wiązki

-> cienka doprowadzająca tuba przez detektor  
możliwość detekcji  $4\pi$

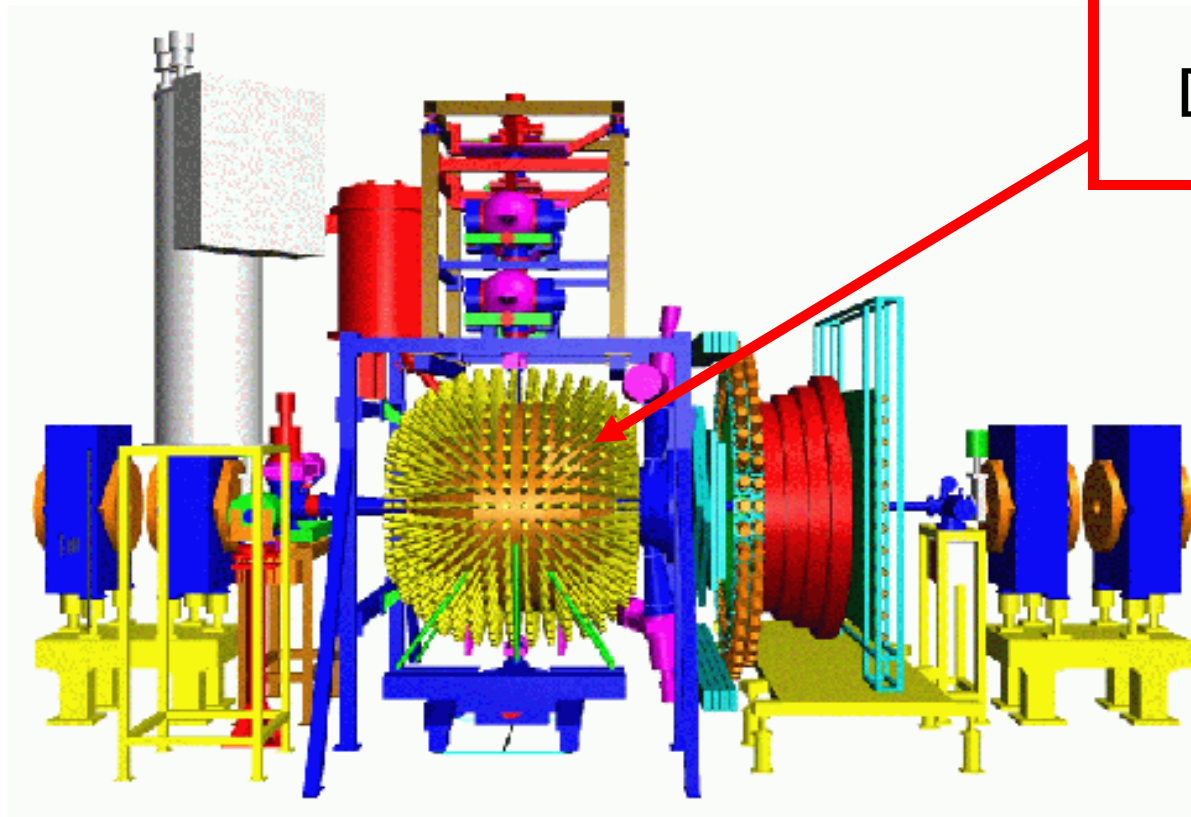
WASA at COSY



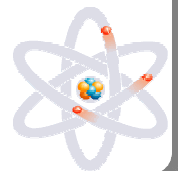




# Central Detector



Central  
Detector



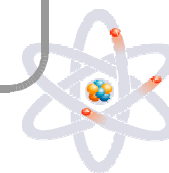


# Central Detector



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WASA at COSY



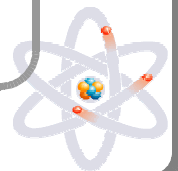


# Central Detector



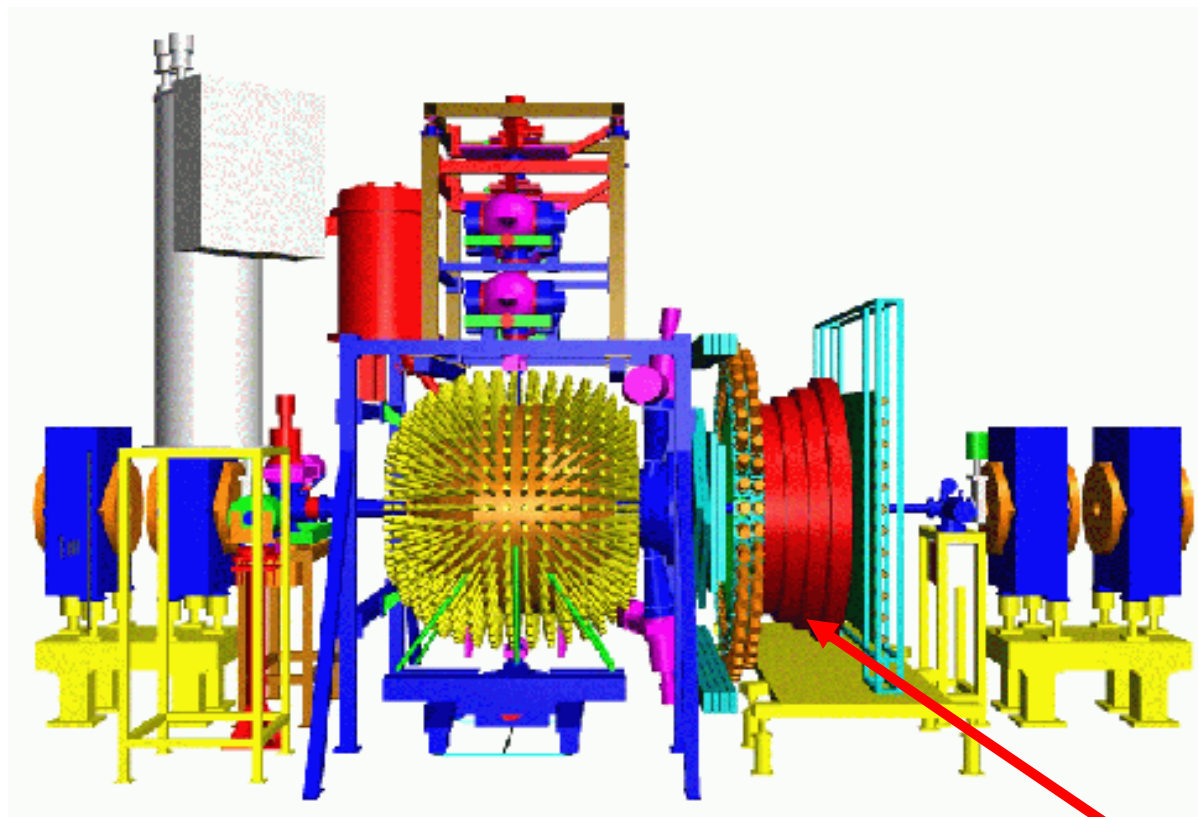
Benedykt Jany 25 - 08 - 2006 Fz-Jülich 11

WASA at COSY

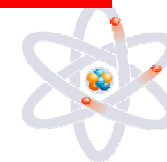




# Forward Detector



Forward Detector



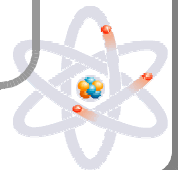


# Forward Detector



Benedykt Jany 25 - 08 - 2006 Fz-Jülich 13

WASA at COSY

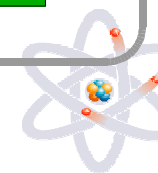




# Produkcja na **WASA** at **COSY**

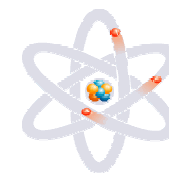
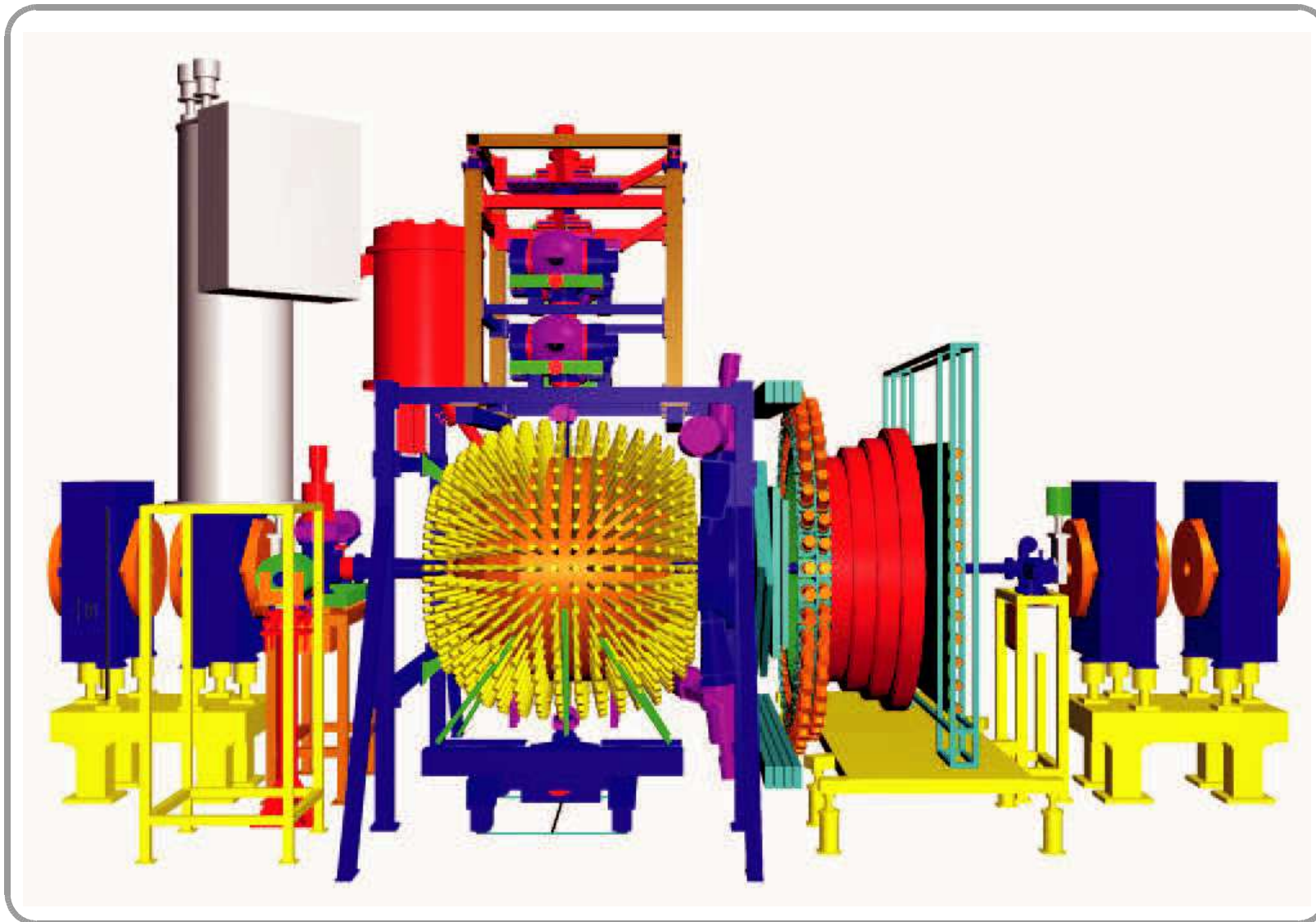
$L = 1 \cdot 10^{32}$	$pp \rightarrow pp \eta$	$pp \rightarrow pp \eta'$
$T_{\text{beam}}$ [GeV]	1.5	2.54
$P_{\text{beam}}$ [GeV]	2.25	3.35
$Q$ [MeV]	94	45
$\sigma$ [ $\mu\text{b}$ ]	25	0.3
Rate [1/s]	2500	30

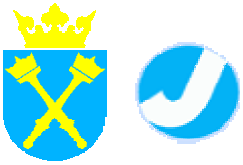
<i>Rozpad</i>	<i>BR</i>	<i>Istniejące dane [zdarzenia]</i>	<i>WASA@COSY zdarzenia na dzień !!!</i>
$\eta' \rightarrow \pi^0 \pi^0 \eta$	20.9%	5400	14500
$\eta' \rightarrow \pi^0 \pi^0 \pi^0$	$1.56 \cdot 10^{-3}$	130	145
$\eta' \rightarrow \pi^+ \pi^- \eta$	44.3%	8200	18000
$\eta' \rightarrow \pi^+ \pi^- \pi^0$	< 5.0%	-	85
$\eta' \rightarrow \rho^0 \gamma$	29.5%	9550	44000
$\eta' \rightarrow \omega \gamma$	3.03%	160	1200
$\eta' \rightarrow \gamma \gamma$	2.12%	2667	17100
$\eta' \rightarrow \mu^+ \mu^- \gamma$	$1.04 \cdot 10^{-4}$	33	15
$\eta' \rightarrow e^+ e^- \gamma$	< $9 \cdot 10^{-4}$	-	45
$\eta \rightarrow e^+ e^- \pi^+ \pi^-$	$4 \cdot 10^{-4}$	5	7000
$\eta \rightarrow e^+ e^- e^+ e^-$	< $6.9 \cdot 10^{-5}$	-	450
$\eta \rightarrow e^+ e^-$	< $7.7 \cdot 10^{-5}$	-	1/6
$\eta \rightarrow \pi^0 e^+ e^-$	< $4 \cdot 10^{-5}$	-	1/15 - 1/2





∞  
**Dziękuję za uwagę !!!**





# Literatura



- H.H.Adam, et al., *Proposal for the Wide Angle Shower Apparatus (WASA) at COSY-Jülich – WASA at COSY*
- M. Jacewicz, et al., „*Report the Charged Decay Products Identification Possibilities in WASA*”, *Physica Scripta* Vol. T104, 98-100, 2003
- S.Kullander, et al., „*First results from the CELSIUS/WASA facility*”, *Nuclear Physics A721* (2003) 563c-569c
- Janusz Zabierowski, et al., „*The CELSIUS/WASA Detector Facility*”, *Physica Scripta* T99, 159-168, 2002
- C.Ekström, et al., „*The WASA facility at the CELSIUS storage RING*”
- <http://www.fz-juelich.de/ikp/wasa>

