PHY397K - NUCLEAR PHYSICS - 8

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Spring 2015, Unique numbers: 57115
RLM 5.116, TTH 12:30 - 2:00 pm

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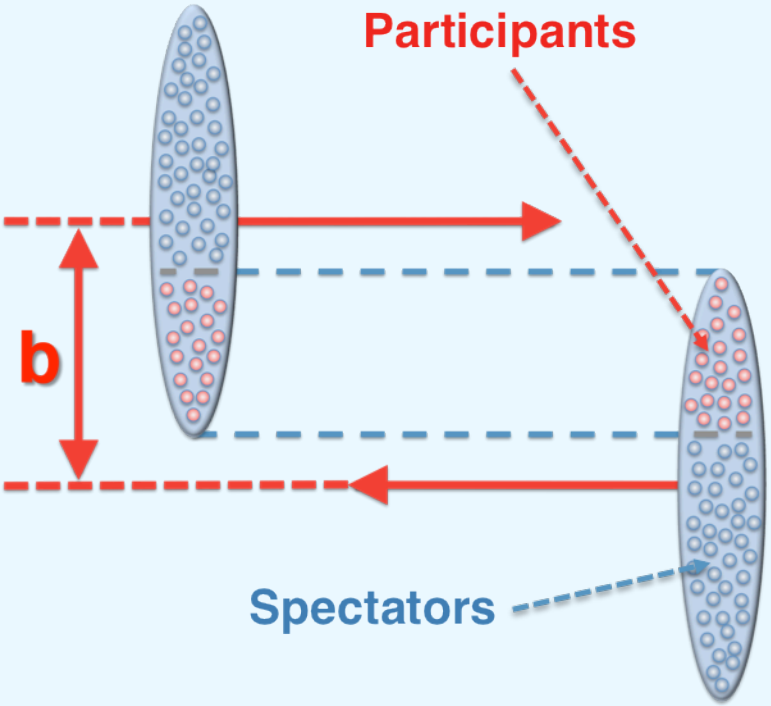
Accelerators: Relativistic heavy ion collisions

Beschleuniger	Ort	HI-Perioden	Max. Energie	Projektile	Experimente
Bevalac	LBNL, Berkeley	1984 - 1993	< 2 *A*GeV	C, Ca, Nb, Ni, Au, ...	Plastic Ball, Streamer Chamber, EOS, DLS
Synchro-Phasotron	JINR, Dubna	1974 - 1985	> 100 *A*MeV		
AGS	BNL, Brookhaven	1986 - 1994	14.5/11.5 *A*GeV	Si, Au	E802, ..., E917
SPS	CERN, Geneva	1986 →	200/158 *A*GeV	O, S, In, Pb	NA34,... , WA80,...
SIS	GSI, Darmstadt	1992 →	2 *A*GeV	Kr, Au	FOPI, KAOS, HADES
RHIC	BNL, Brookhaven	2000 →	$\sqrt{s_{NN}}$ = 200 GeV	Cu,Au	STAR, PHENIX, BRAHMS, PHOBOS
LHC	CERN, Geneva	2009 →	$\sqrt{s_{NN}}$ = 5.5 TeV	O, Ar, Pb	ALICE, CMS, ATLAS
SIS100/300	GSI, Darmstadt	2019 →	30/45 *A*GeV	Au	HADES, CBM
Nuklotron	JINR, Dubna	2017 →	6 *A*GeV	Au	
NICA	JINR, Dubna	2017 →	$\sqrt{s_{NN}}$ = 4 – 11 GeV	Au	MPD

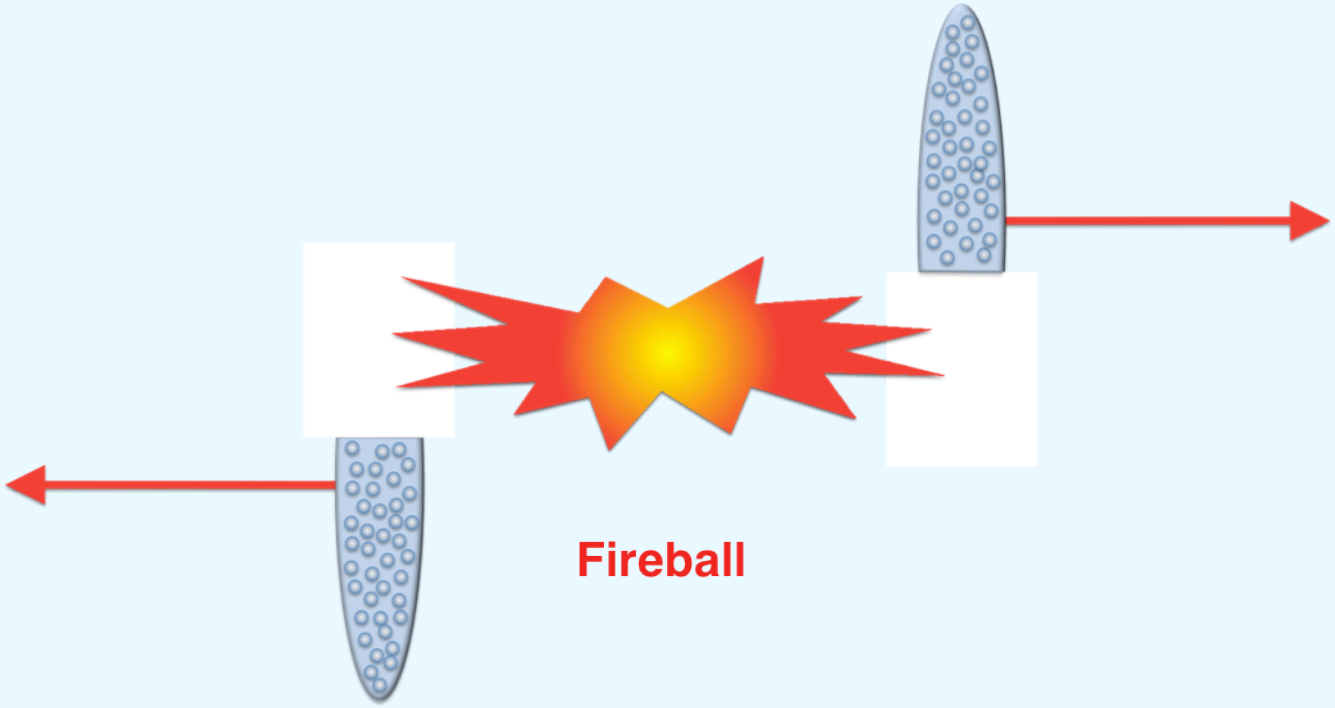
Participant – Spectator



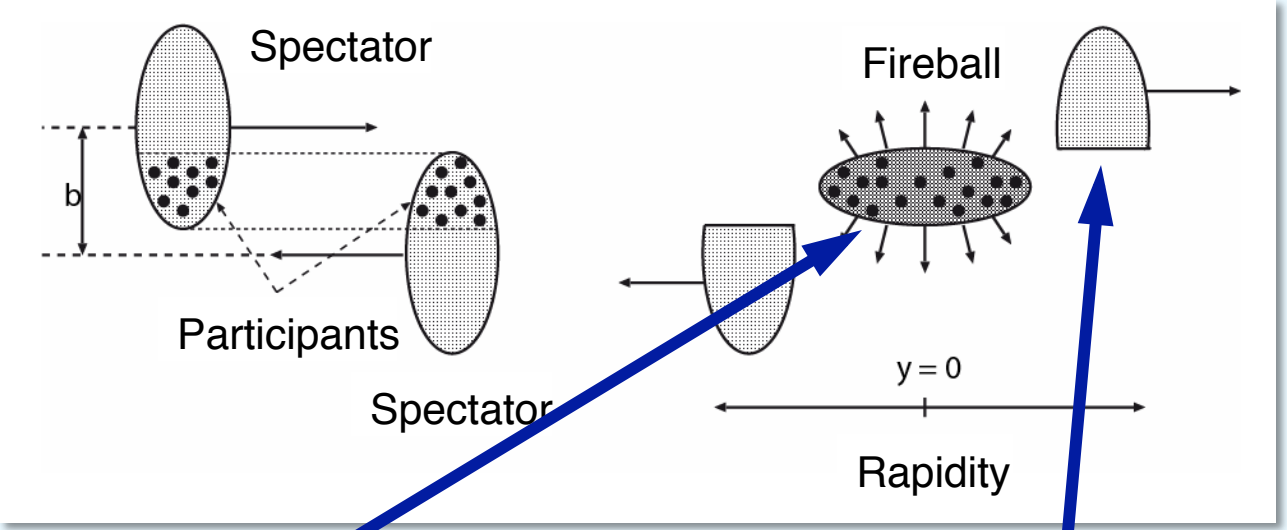
b = Impact Parameter

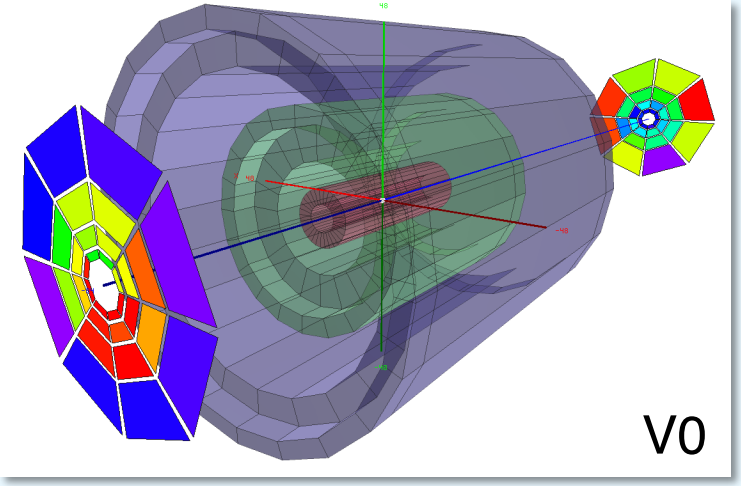
b=0 => central collision

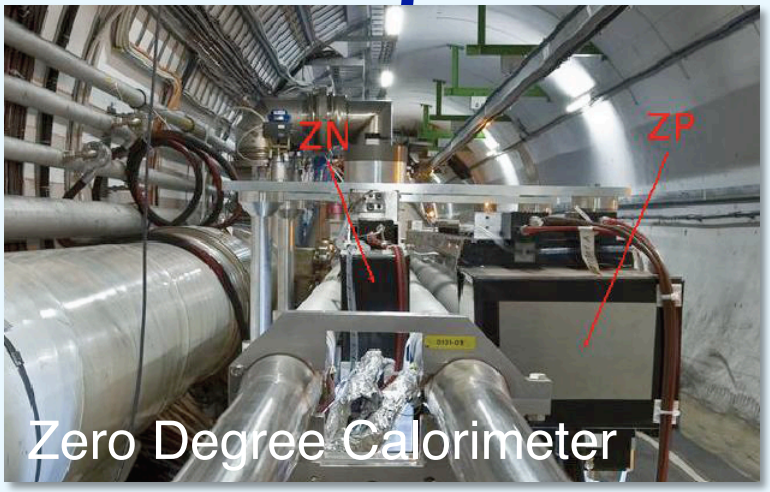
Participant – Spectator



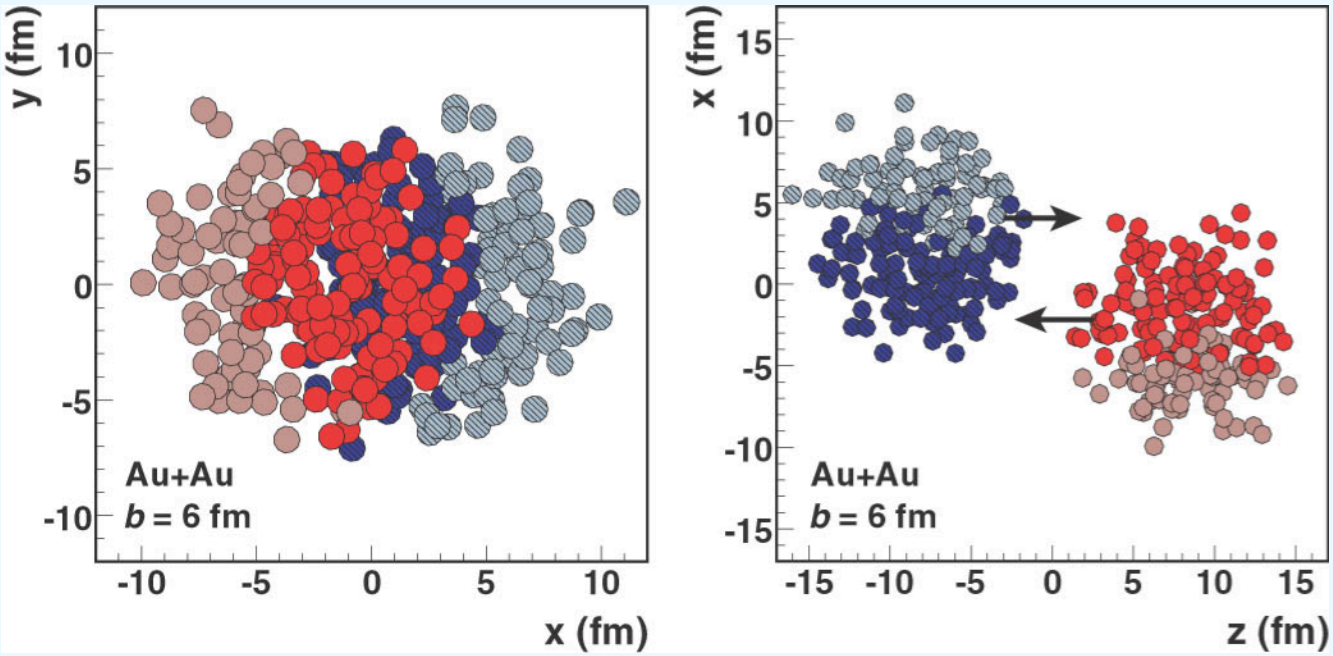
Centrality selection in ALICE



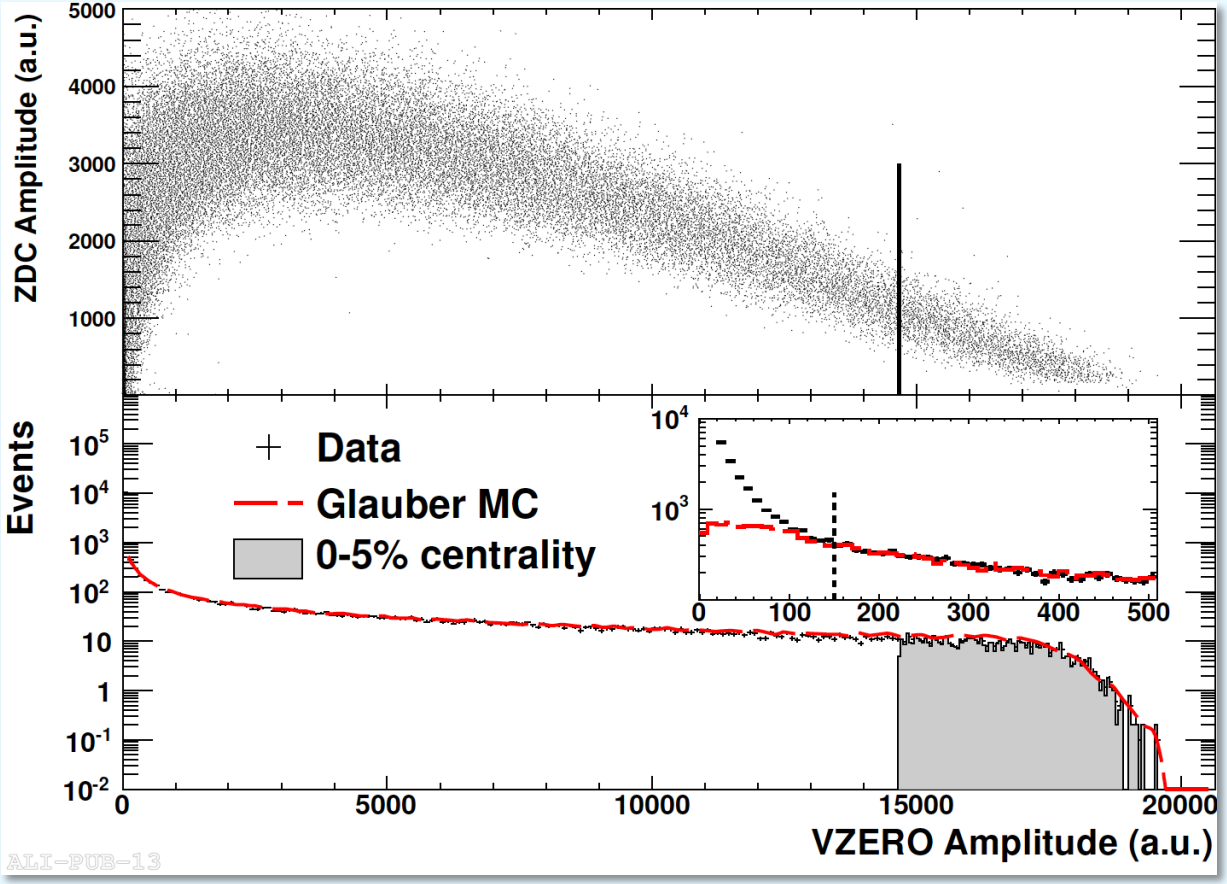




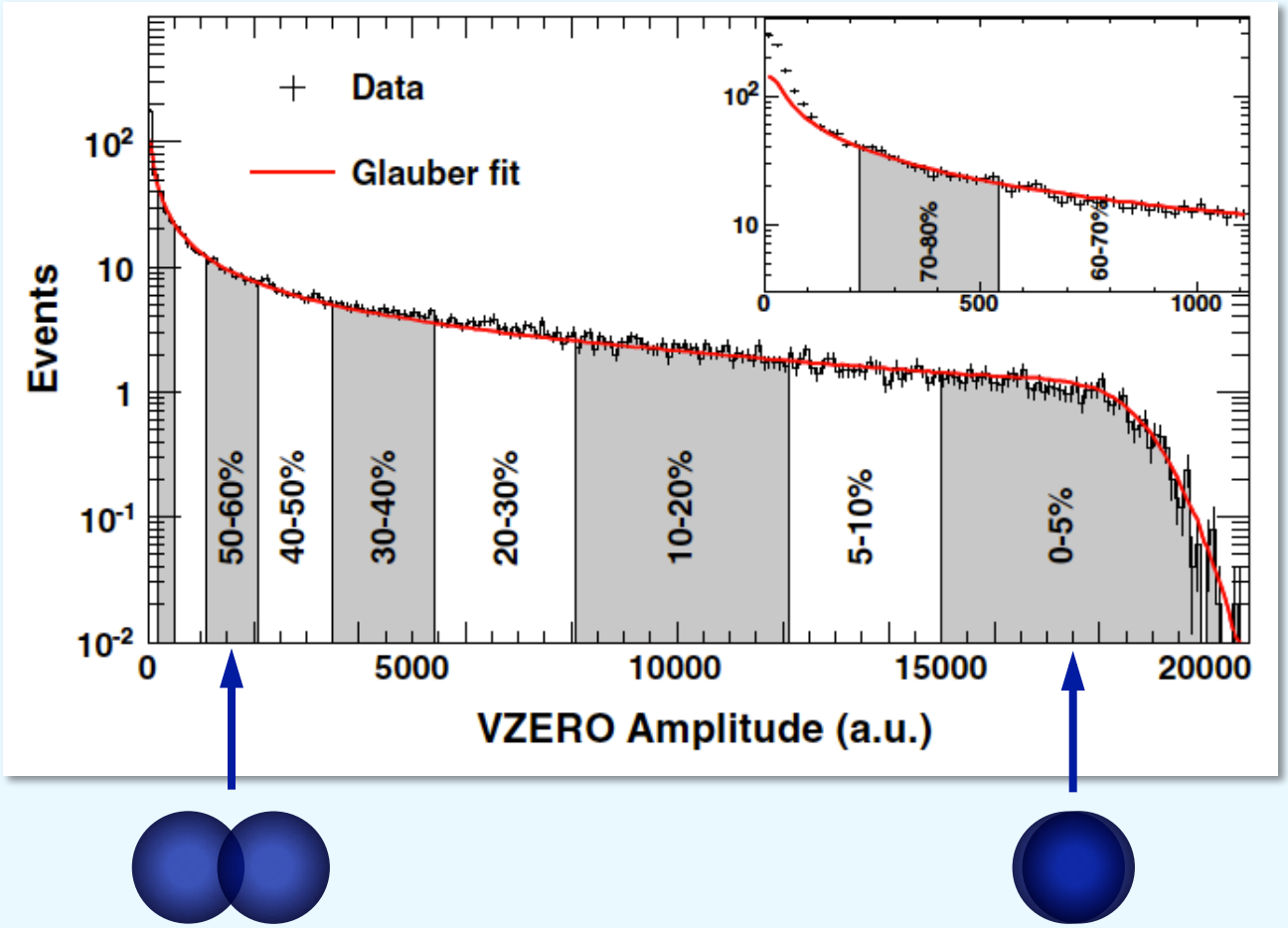
Participant – Spectator Szenario (Glauber Calculation)



Measuring Centrality with ALICE

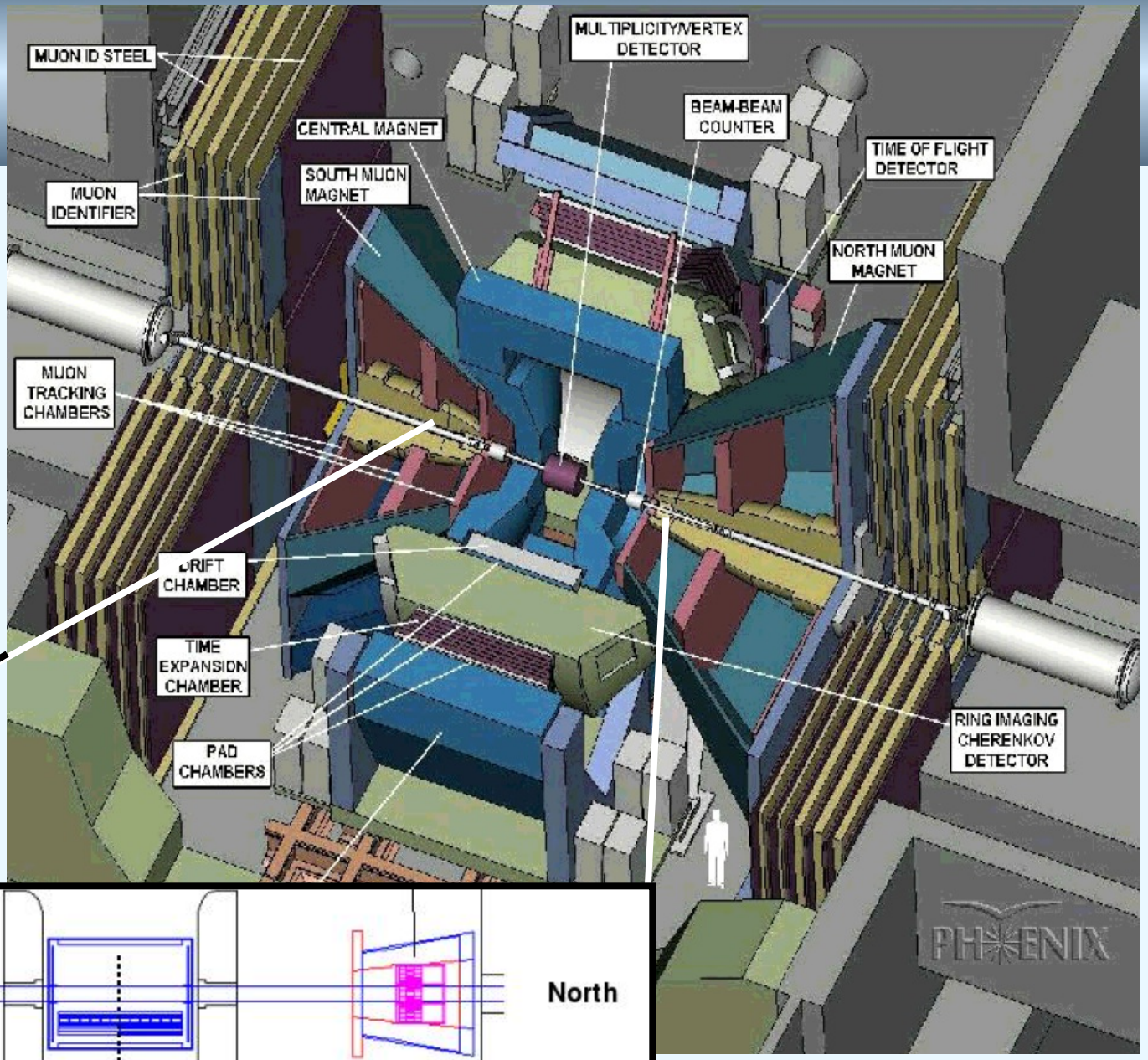


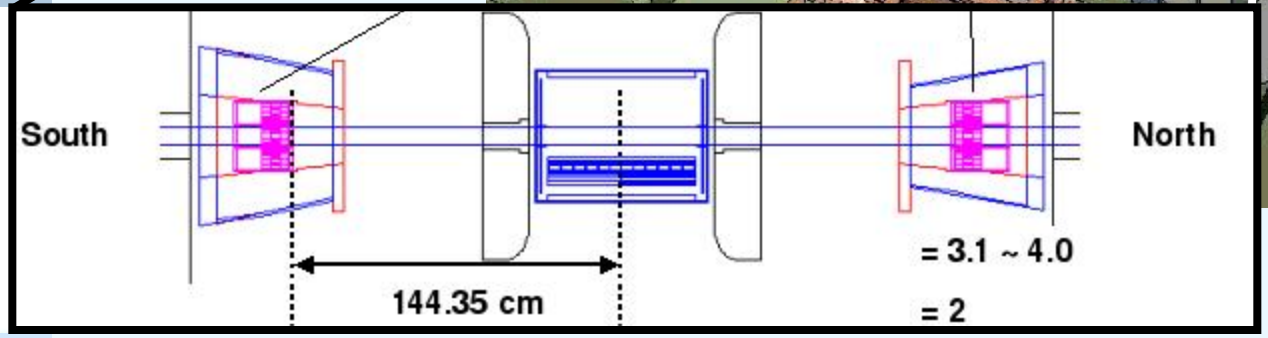
Centrality classes (ALICE)



-> get Impact parameter and Number of Participants (+errors)

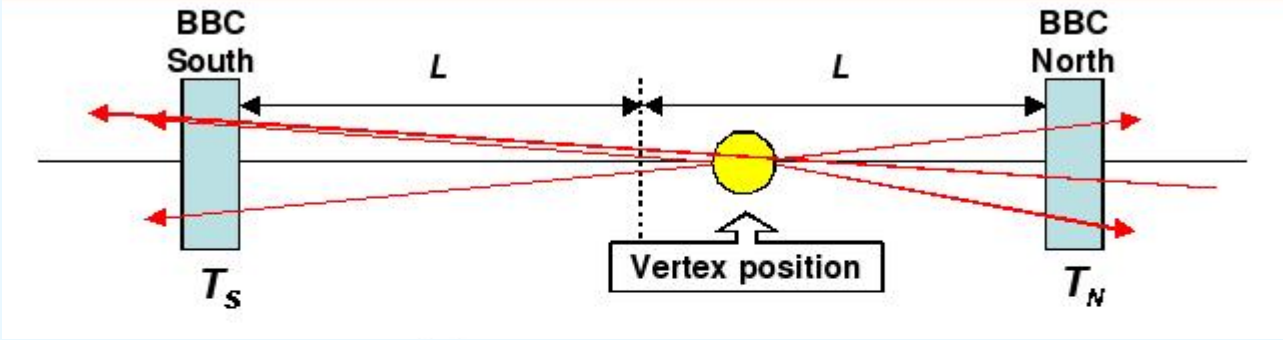
Beam-Beam Counter RHIC



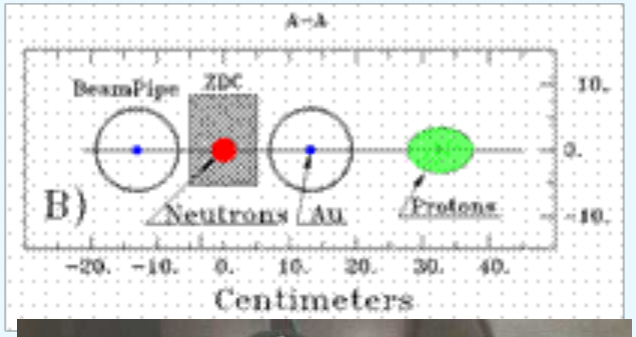


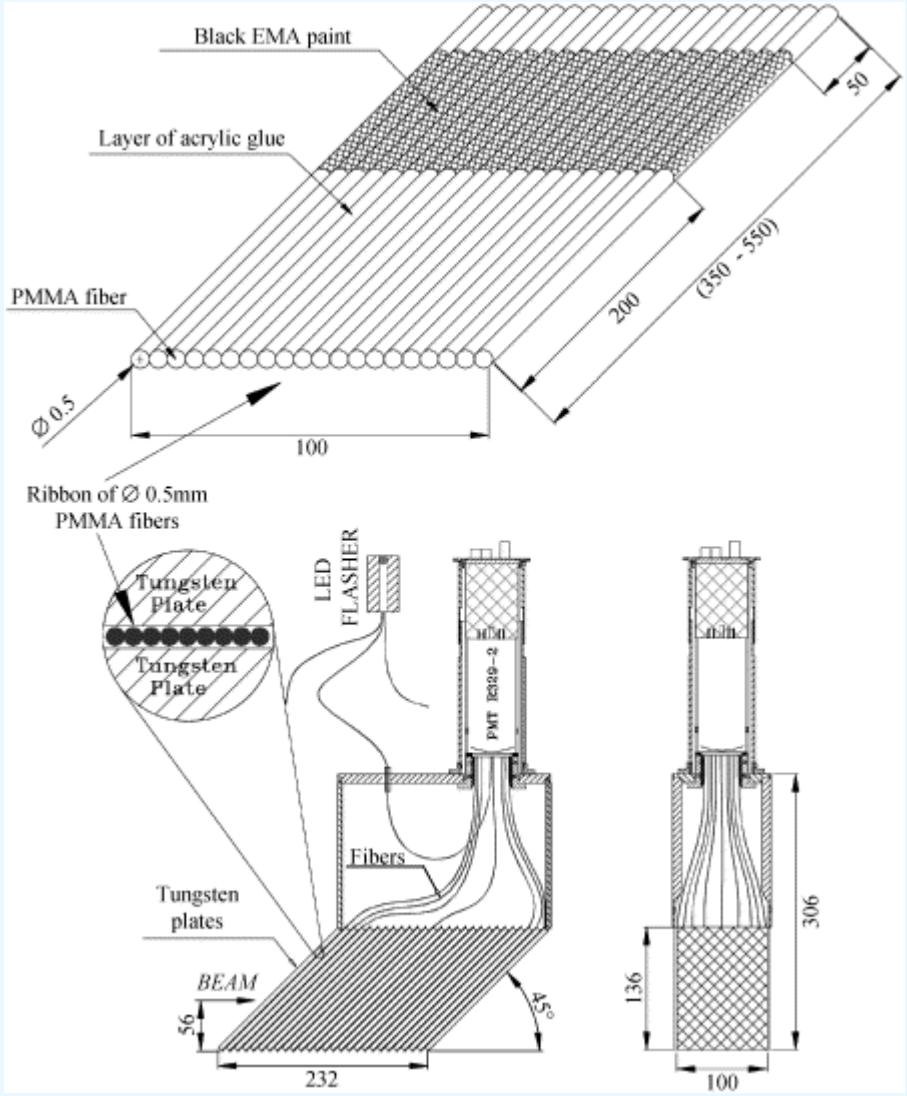
Beam-Beam Counter am RHIC

Each element consists of quartz Cherenkov radiator and meshed dynode PMT.



Zero Degree Calorimeter (ZDC) at RHIC (spectators)





Centrality classes at RHIC