

**SELEX RICH
(Ring Imaging
Cerenkov Counter)-
A Few Reminders
for E907**

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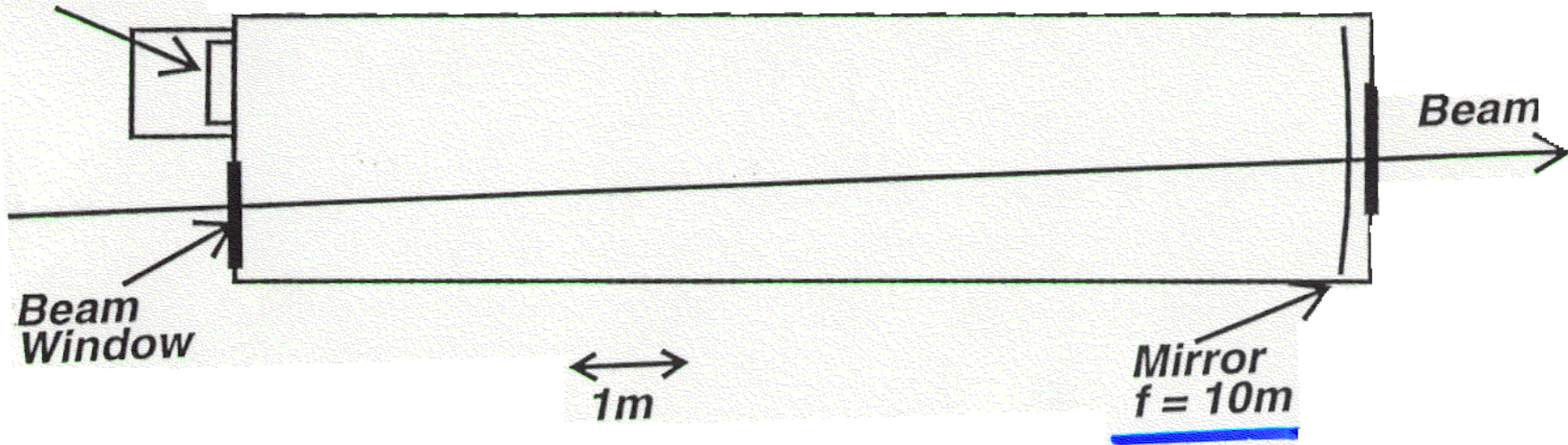
Elmhurst College &
The University of Chicago

E907 Collaboration Meeting
February 16, 2002



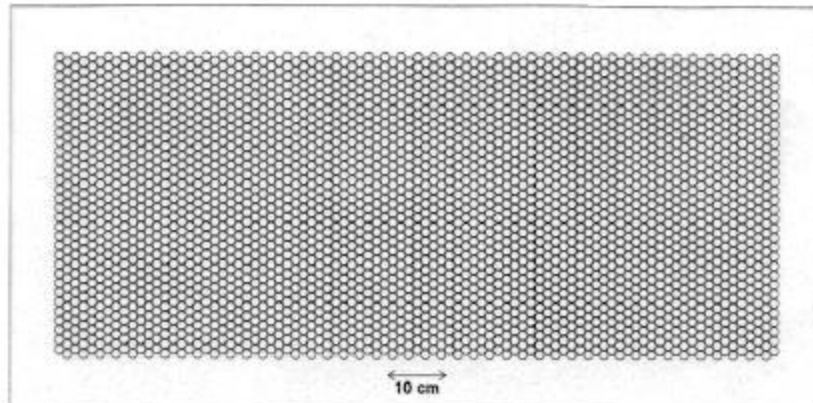
2848 tubes

Phototube Array

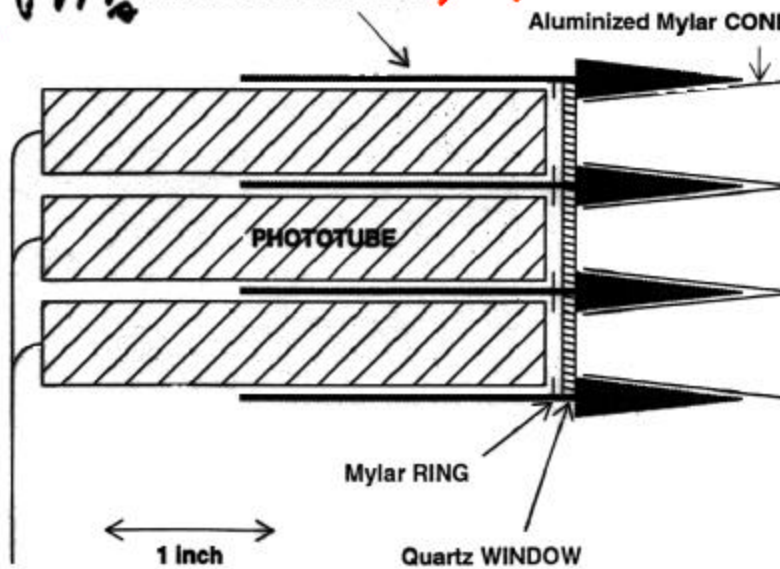


2.4m x 1.2m

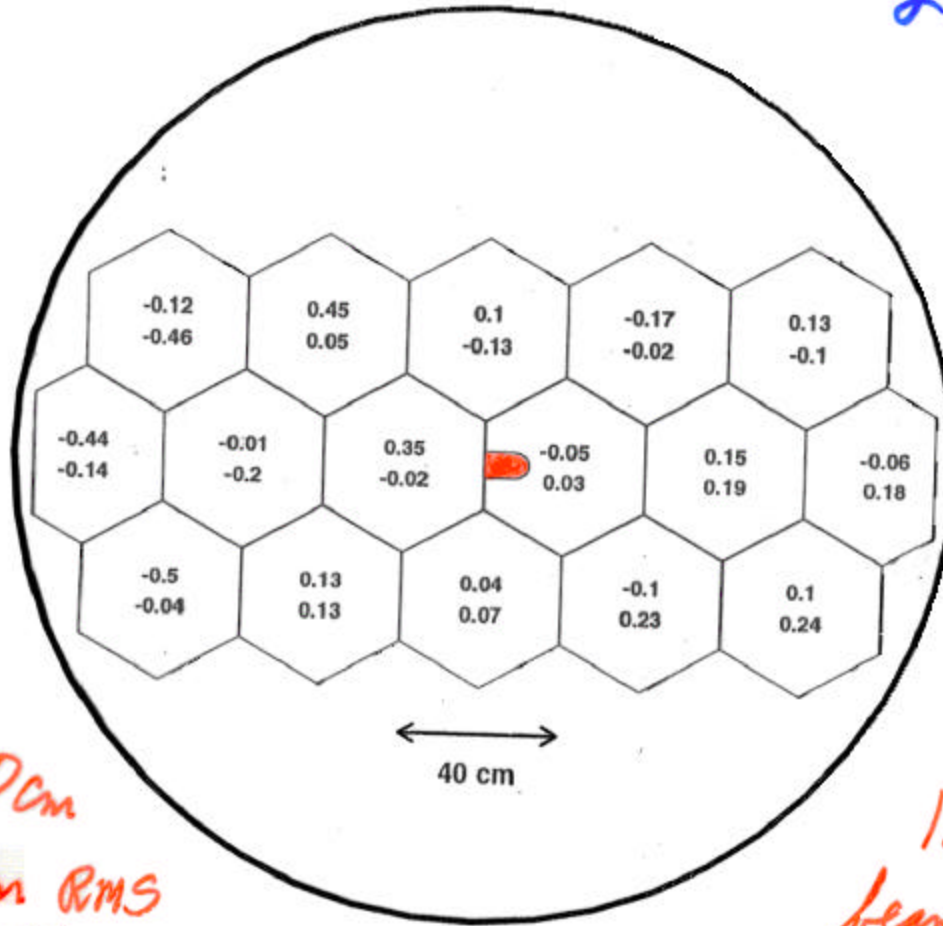
150cm x 50cm active area



2848 PNT → 608 R760 + 2240 FEU
quartz *wavelength shift*

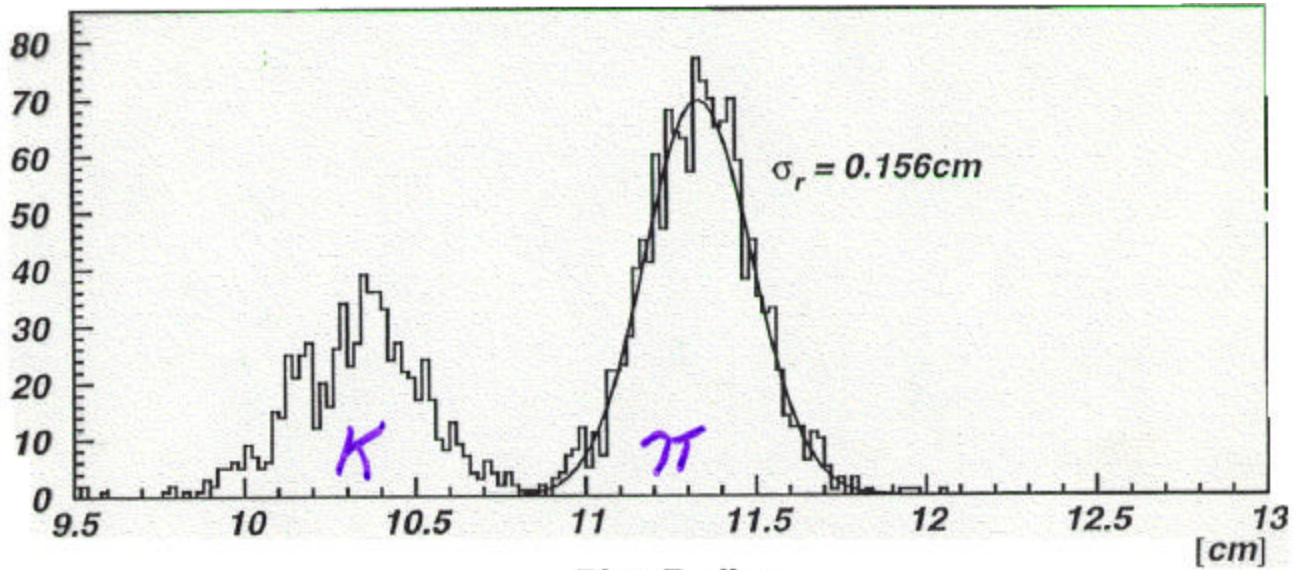


2.4m x 1.2m



$f = 990 \text{ cm}$
 $\pm 2.5 \text{ cm RMS}$

11cm x 68cm
beam hole



$$\sigma_r = 5.5 \text{ mm}$$

$$\sigma_{rel} = 1.56 \text{ mm}$$

$$\sigma_{rel} = 1.8 \text{ mm}$$

Ring Radius

isolated tracks

95-105 GeV/c

$$\sigma_r \approx \frac{\sigma_r}{\sqrt{N_{hit}}}$$

Some Possible P907 RICH Gasses

GAS	$\delta = n-1$ (10^{-6})	dispersion F_h (mm)	UV cutoff (nm)	r_1 (cm)	scint. light	Threshold Momentum (GeV/c)		
						B	K	p
Ne	67	1.2	<170	11.6	low?	12	43	81
Ar	283	?	?	23.8	?	6	21	39
N_2	298	2.8	<170	24.4	HIGH	6	20	38
CO ₂	410	3.1	~200	28.6	modest	5	17	33

$$\delta = 1 - \frac{1}{n^2}$$

$$n = 1 + \delta$$

$$N_{pe} = N_0 L \sin^2(\theta_c) - N_0 L \delta^2$$

$$r_\delta = f \theta_c - f [2 \delta]^2$$

$$r_1 = f [2 \delta]^2$$

$$P_{th} = M/[2 \delta]^2$$