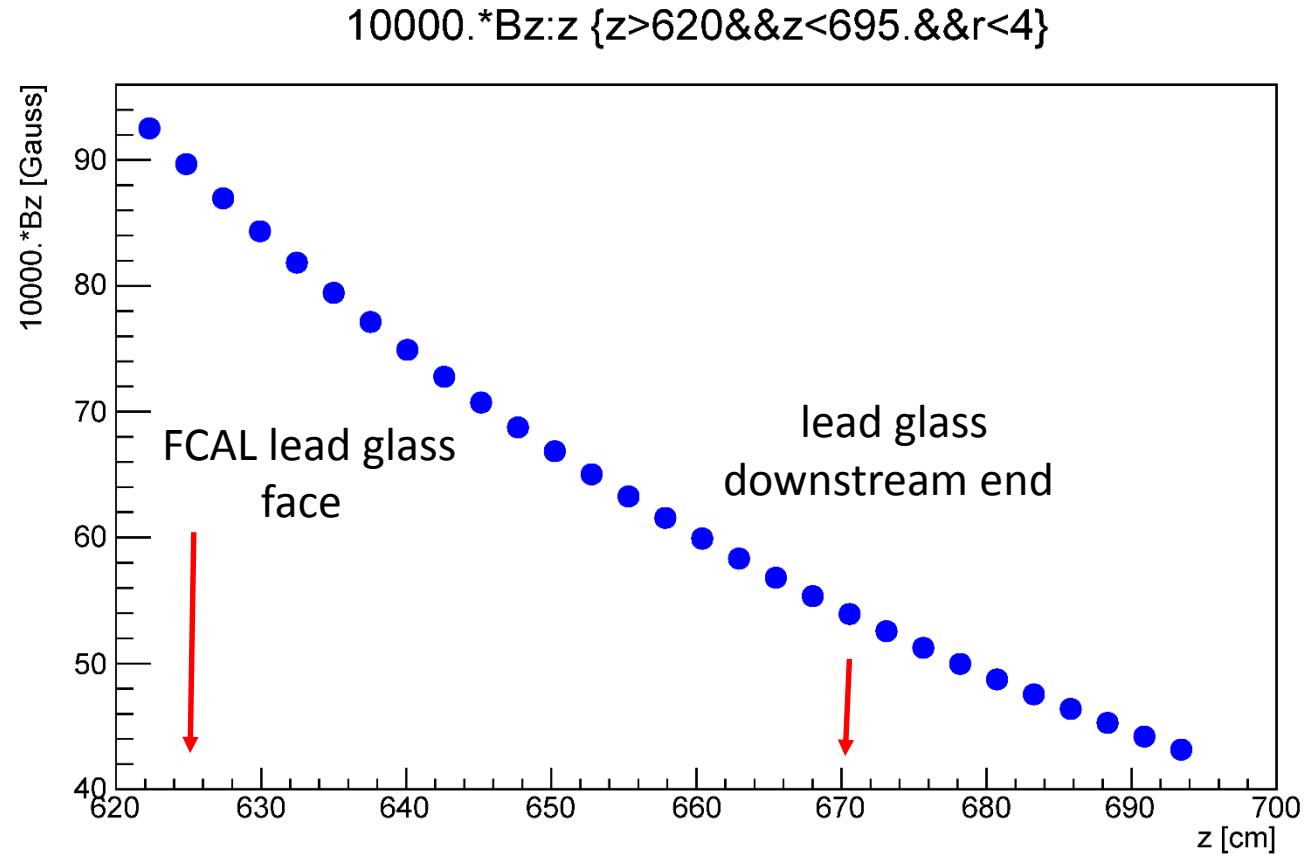


# Study FCAL II Magnetic Shielding

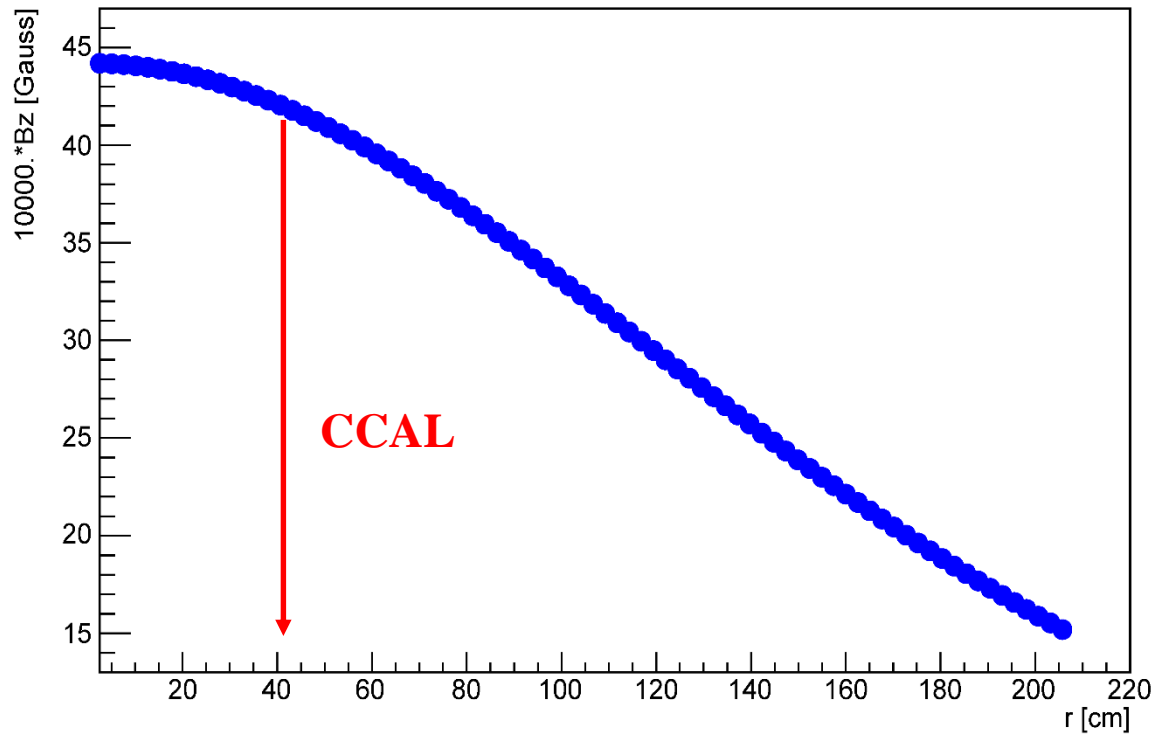
# Solenoid Magnetic Field



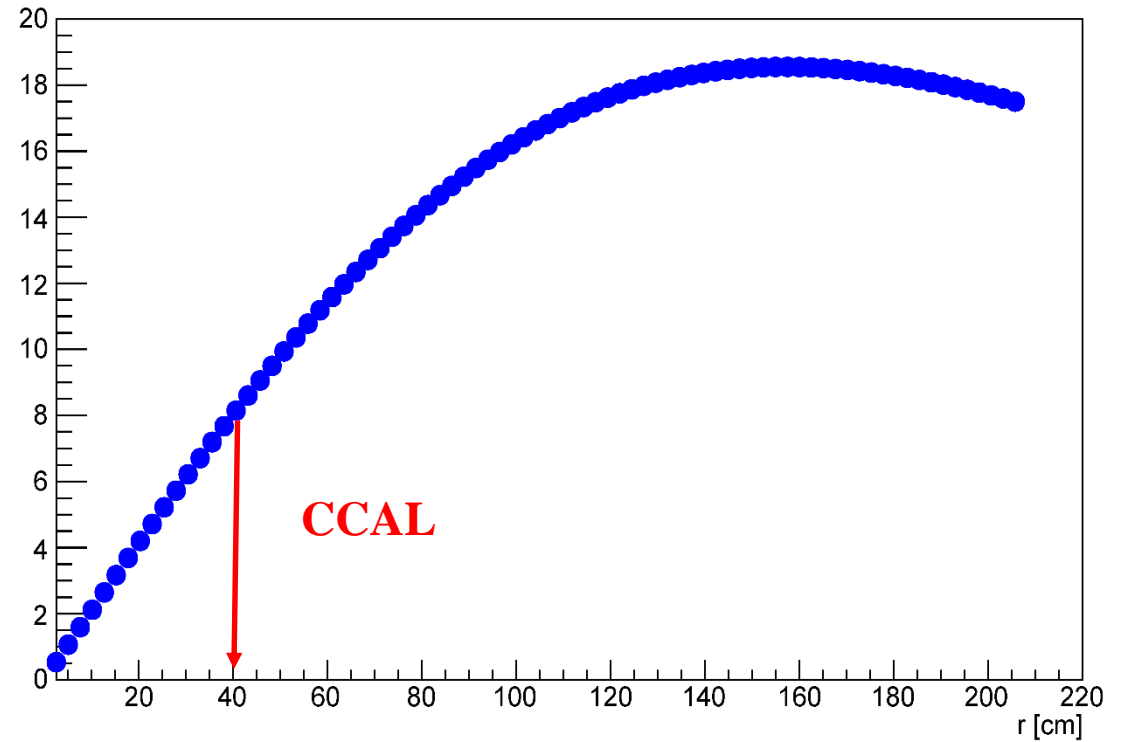
# Solenoid Magnetic Field

20 cm downstream the FCAL lead block

10000.\*Bz:r {z>690&&z<691.}

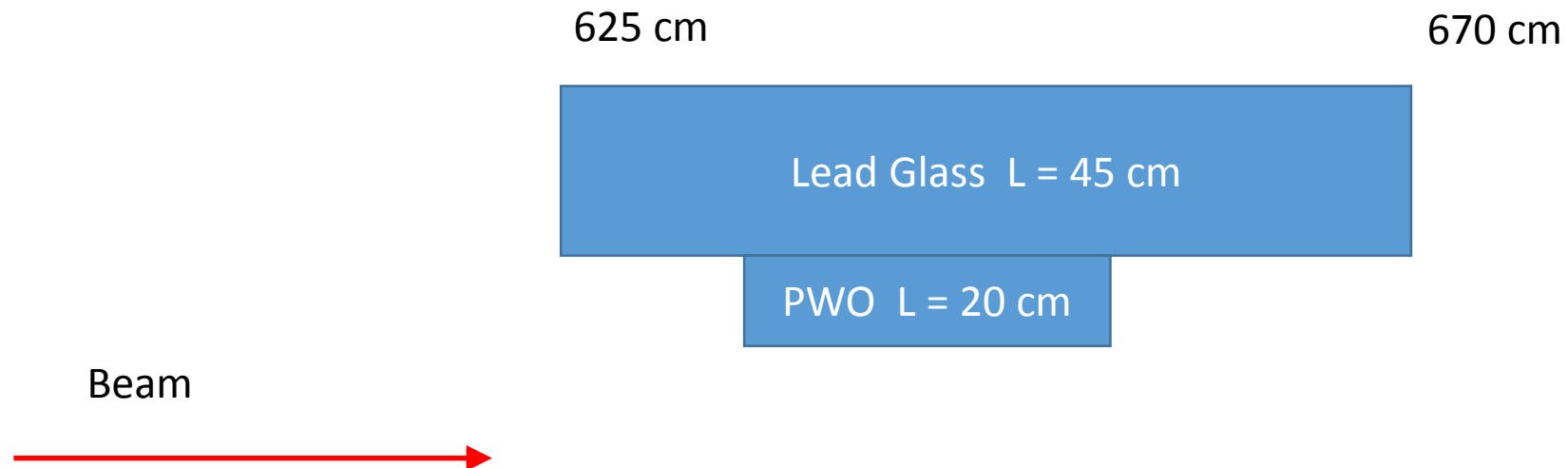


10000.\*Bx:r {z>690&&z<691.}

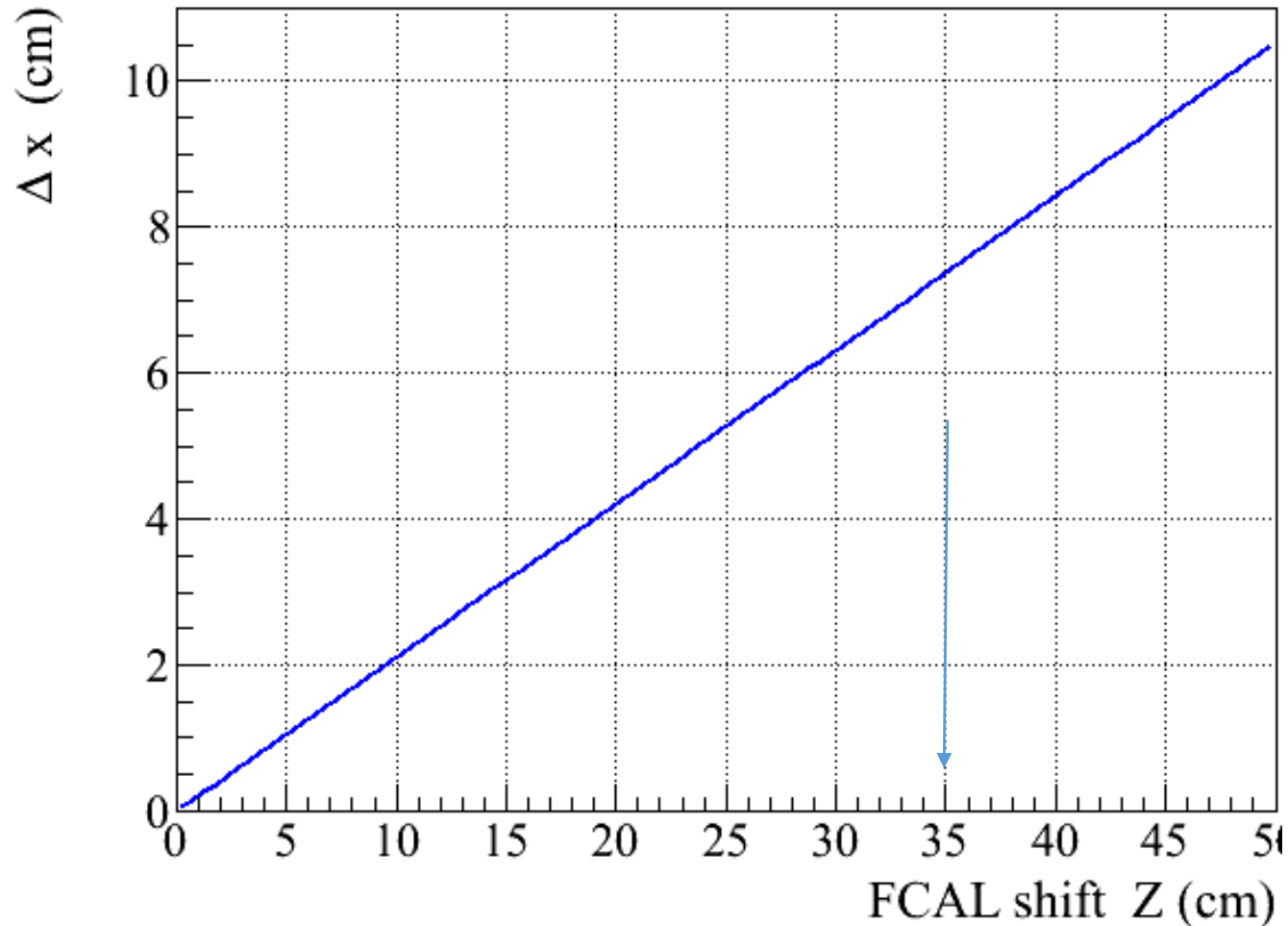


# Solenoid Magnetic Field

Z (cm)	Z (cm)	Bz (r = 0 cm) G	Bx (r = 40 cm) G
625	FCAL upstream face	87	20
645		68	15
670	FCAL downstream face	54	10
690		43	7



## FCAL Acceptance



- FCAL outer rings are not used in analyses (cannot be calibrated using photons from the target)
- Move FCAL downstream the beam

# Calorimeter 3x3 Prototype



## Setup I

PMT housing length 10.5 cm

PMT length (no leads): 8.73 cm

LG length: 3.5 cm

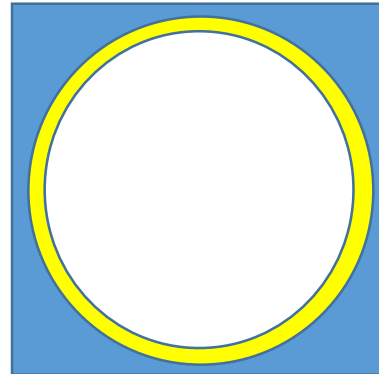
Total: 12.23 cm

Flange (+gap): 0.8 cm

$$12.23 - 0.8 = 11.43 \text{ cm}$$

can make PMT housing 6 – 7 mm longer

20.6 mm



Average crystal width: 20.55 mm

sigma  $\pm$  25  $\mu$ m

ESR thickness: 65  $\mu$ m

$$20.55 + 0.13 = 20.68 \text{ mm}$$

+ Tedlar + brass strips

cannot make housing wider

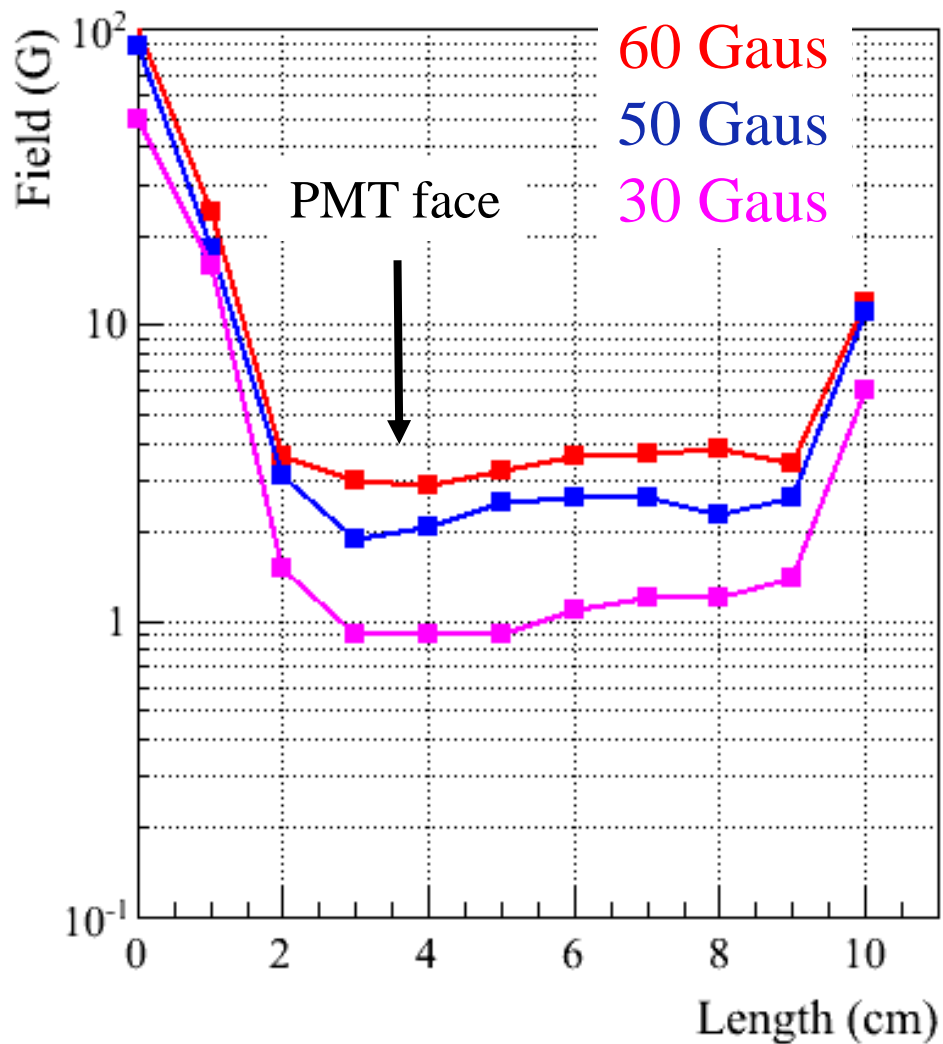
PMT diameter > 19.0 mm

Housing D = 19.8 mm

Mu-metal foil: 300  $\mu$ m

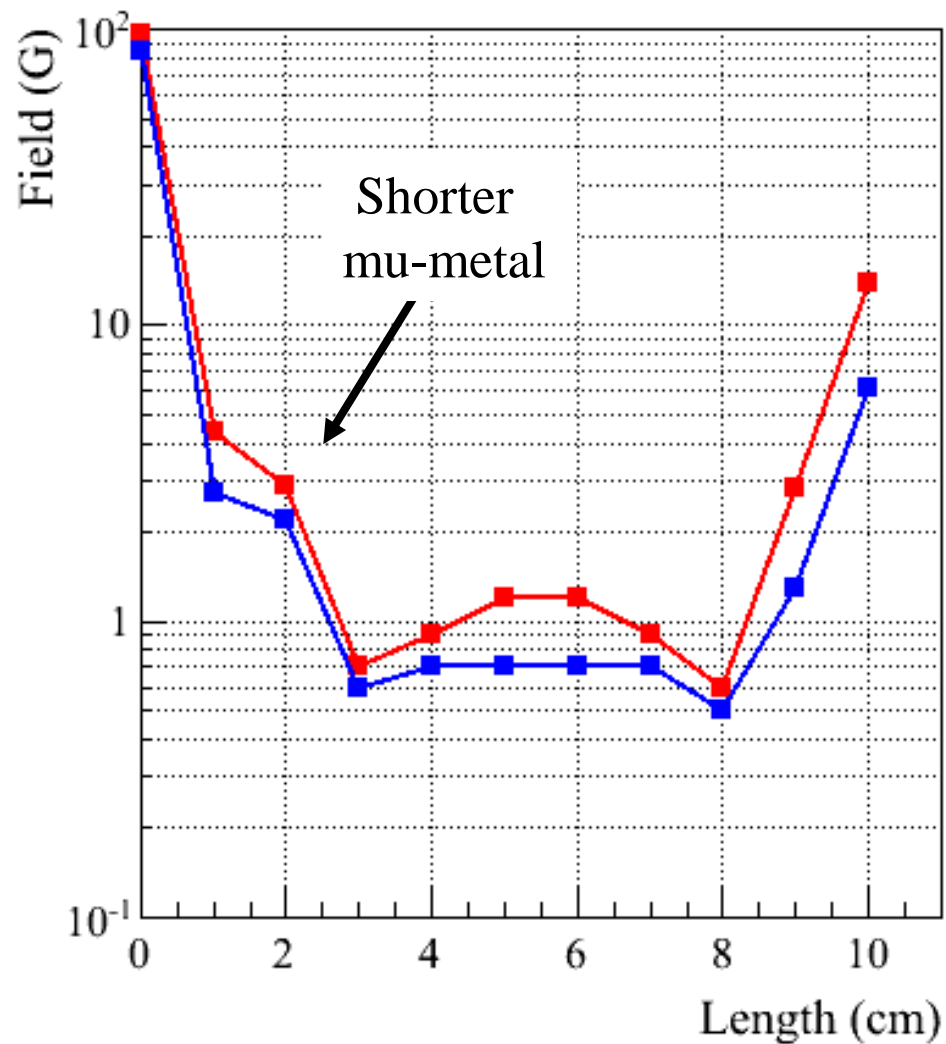
# Longitudinal field

## Setup I



## Setup II

Add one layer of 100  $\mu\text{m}$  mu-metal (2 cm shorter than PMT housing)



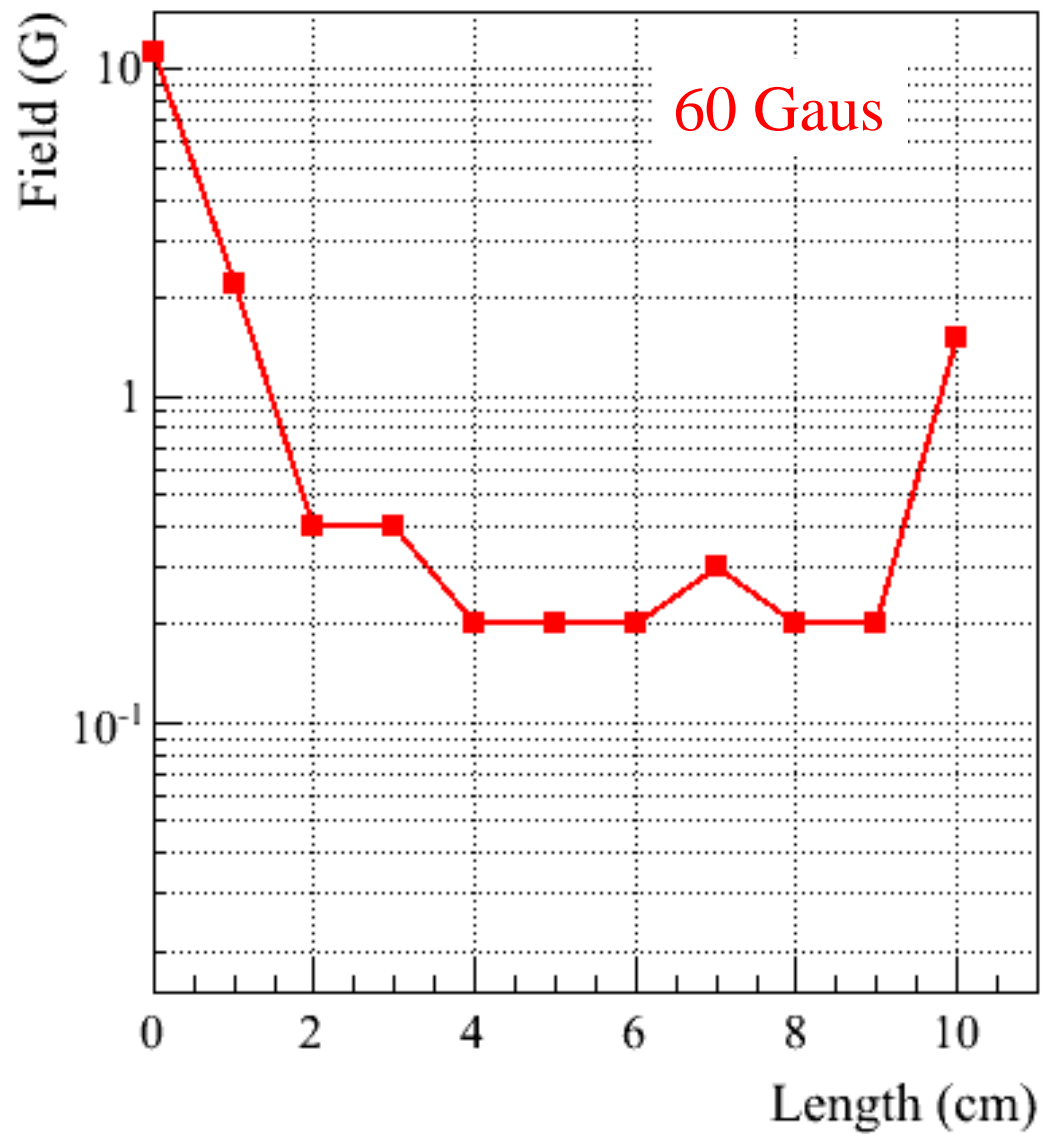
50 Gaus

Setup I: 2.8 G

Setup II: 0.7 G

# Transverse Field

## Setup II

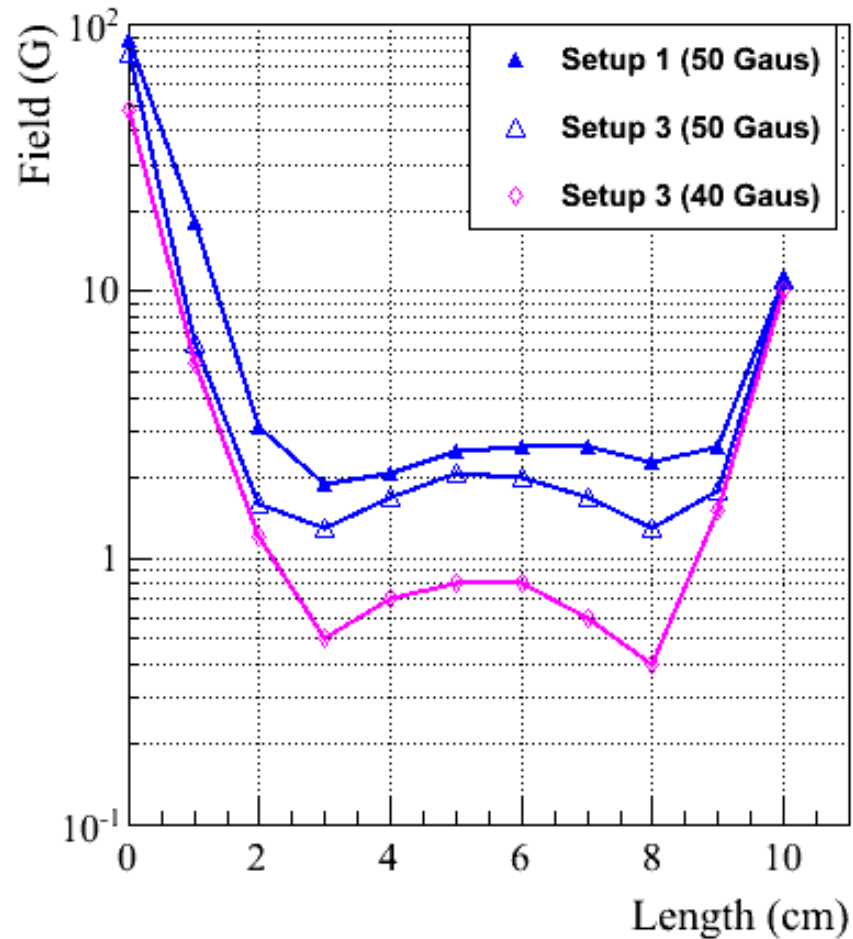
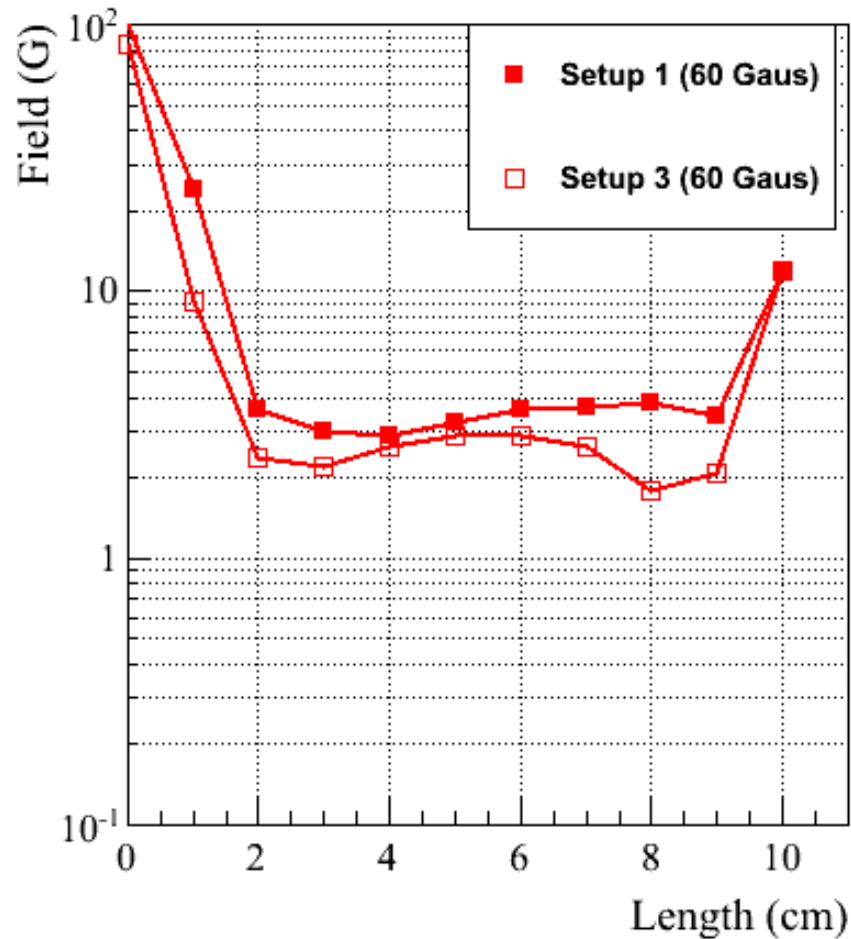




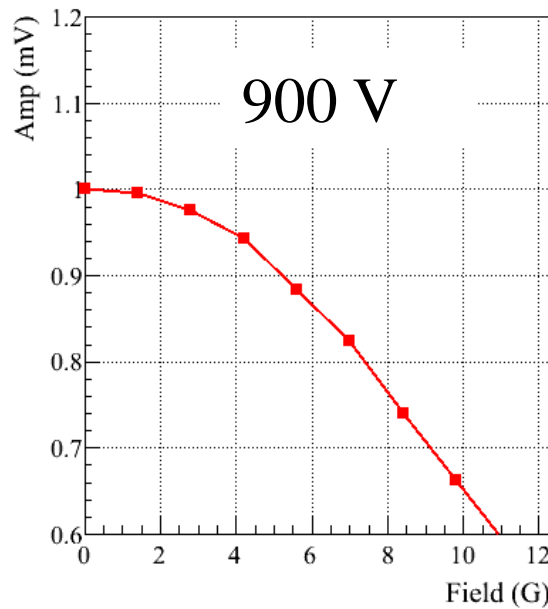
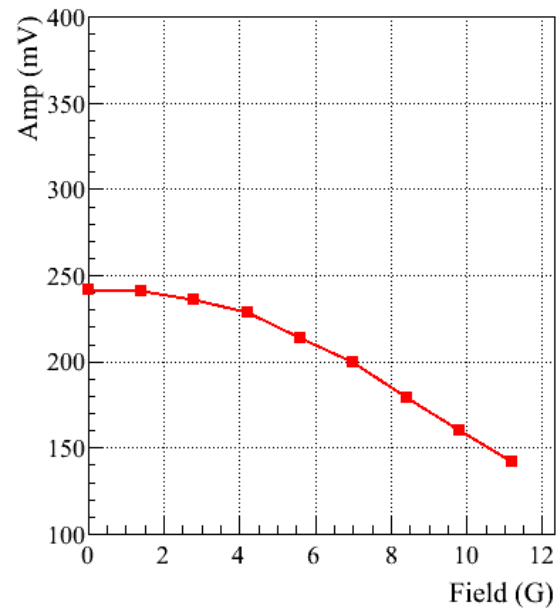
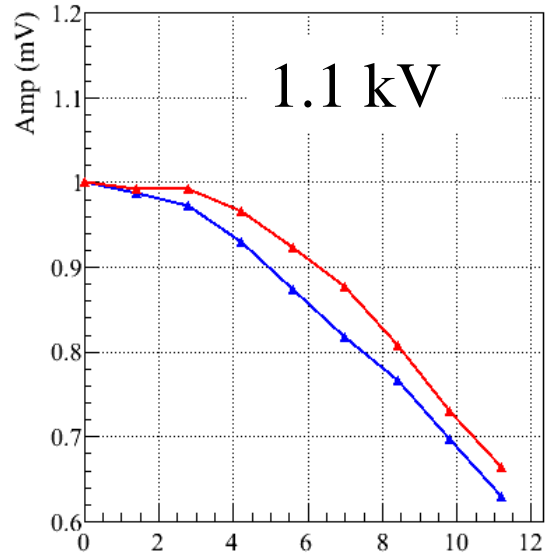
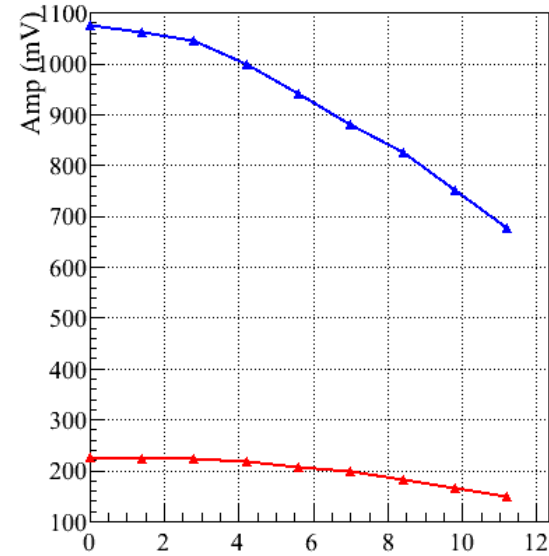
## Setup 3

Replace 350  $\mu\text{m}$  mu-metal shielding with

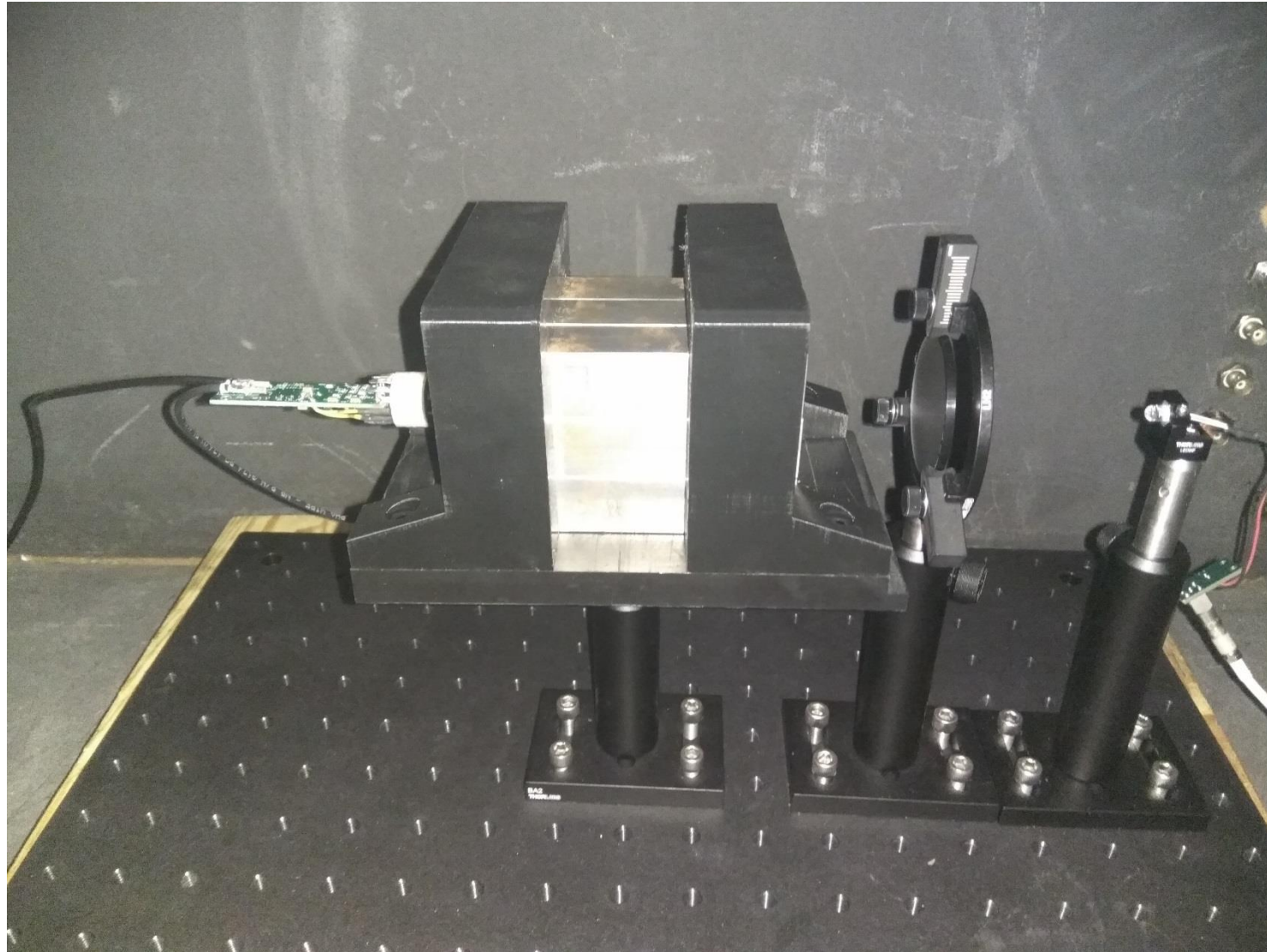
- two layers: two wraps of 100  $\mu\text{m}$  mu-metal (200  $\mu\text{m}$ ) + 100  $\mu\text{m}$  mu-metal
- layers are separated using Kapton



# PMT Response to LED



# LED Setup



# LED Tests

