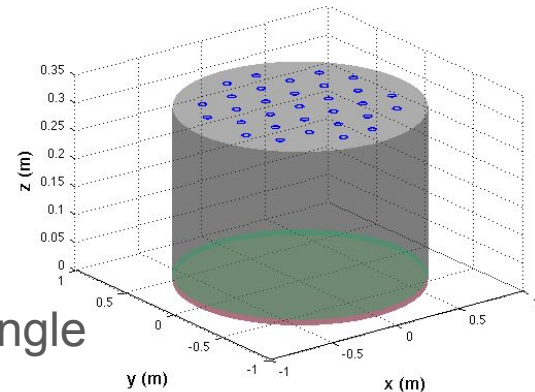


Phase II Optical Simulations

30 May 2017

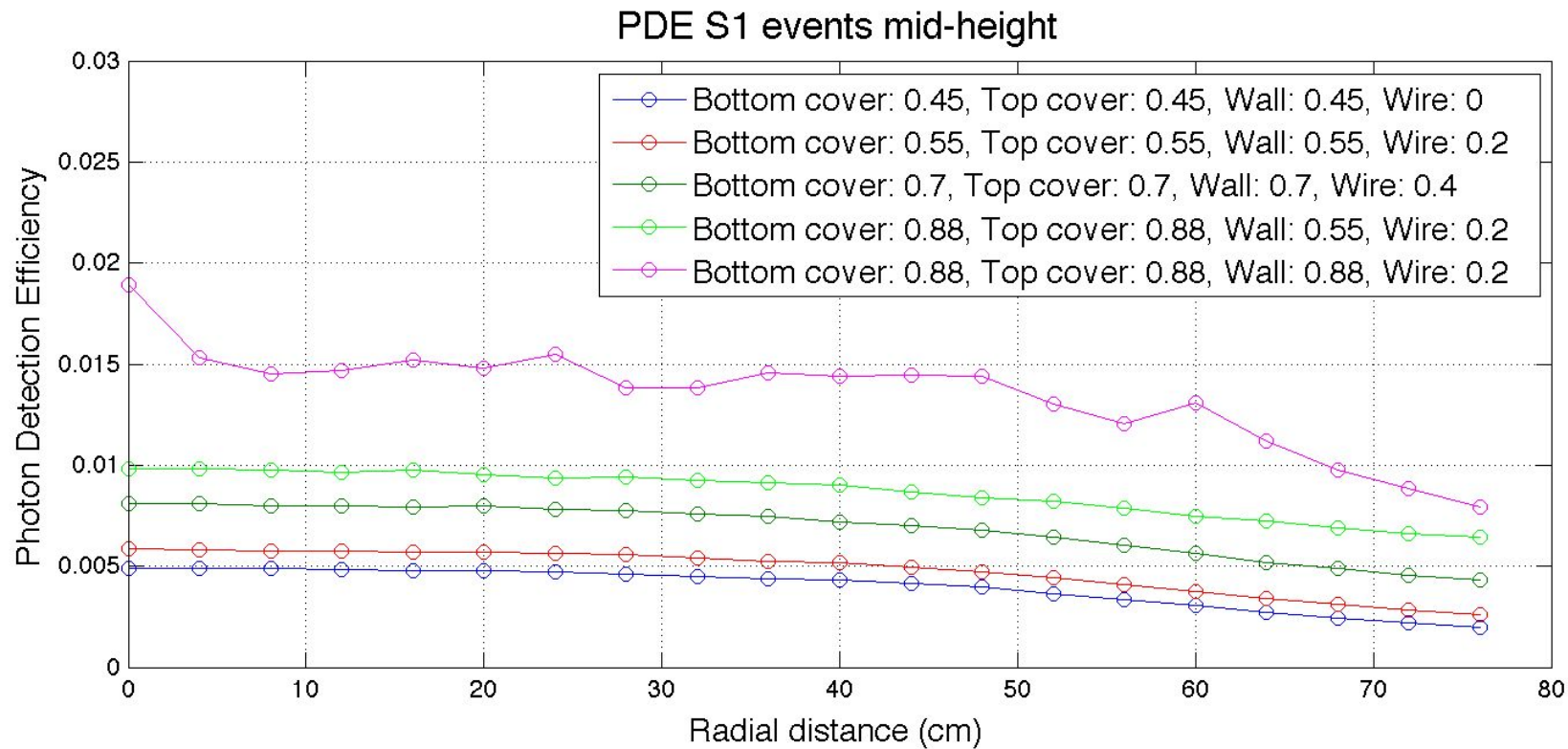
Model of Phase II with 2 layers

- Grid between layers 1 and 2
- Using Ryan's StepInLayer file to correct for reflection angle
- Phase II vessel has ID = 1.667 m
 - Place wall at 1.600 m (minimum reflector distance for a mirror wall with 6.44 cm gap between cathode ring and wall)

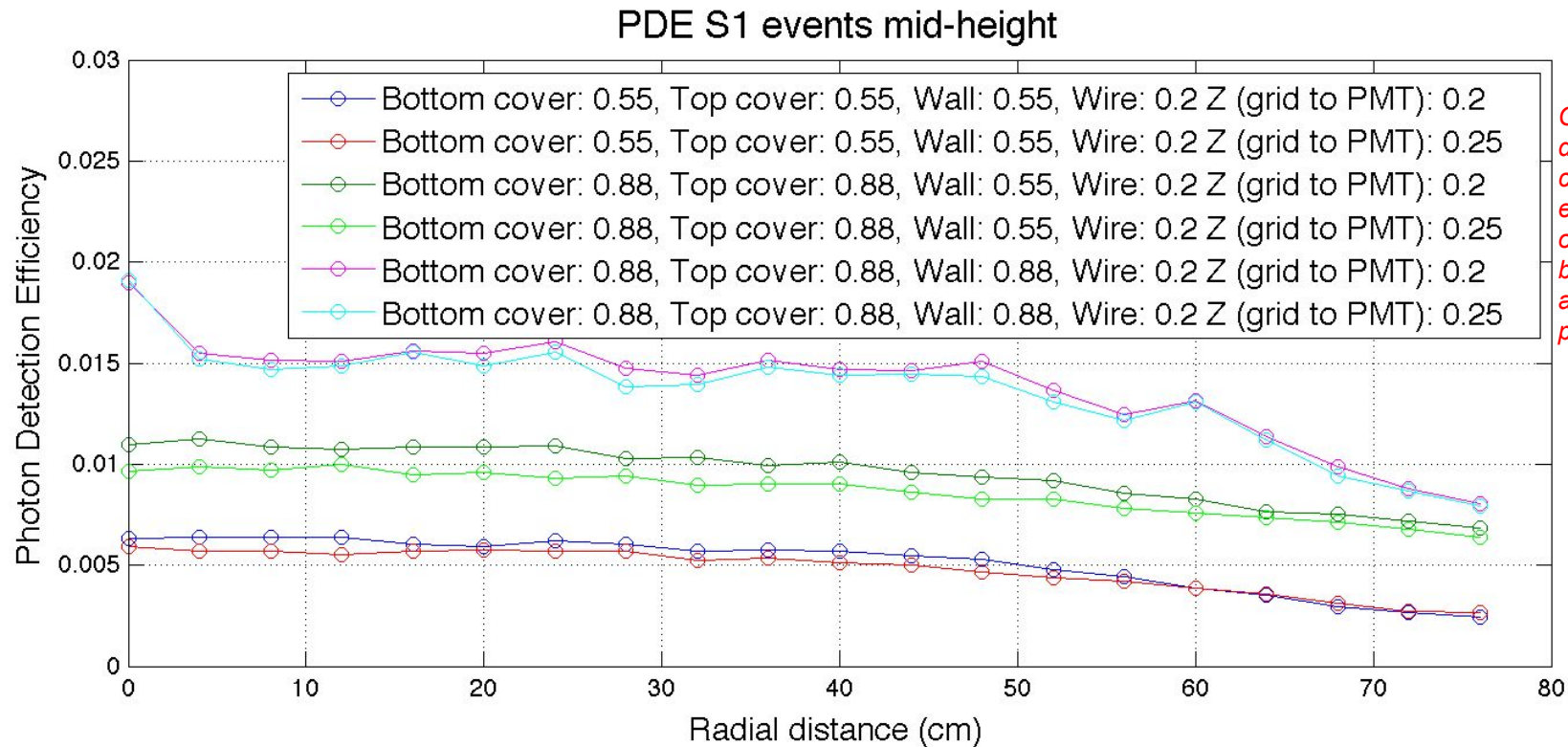


Layer	Name	Wall material	Radius [m]
2	Grid to PMTs	PTFE or AlMgF2	1.600 / 2
1	Bottom plate to grid	PTFE or AlMgF2	1.600 / 2

Model of Phase II with 2 layers: Radial sweep

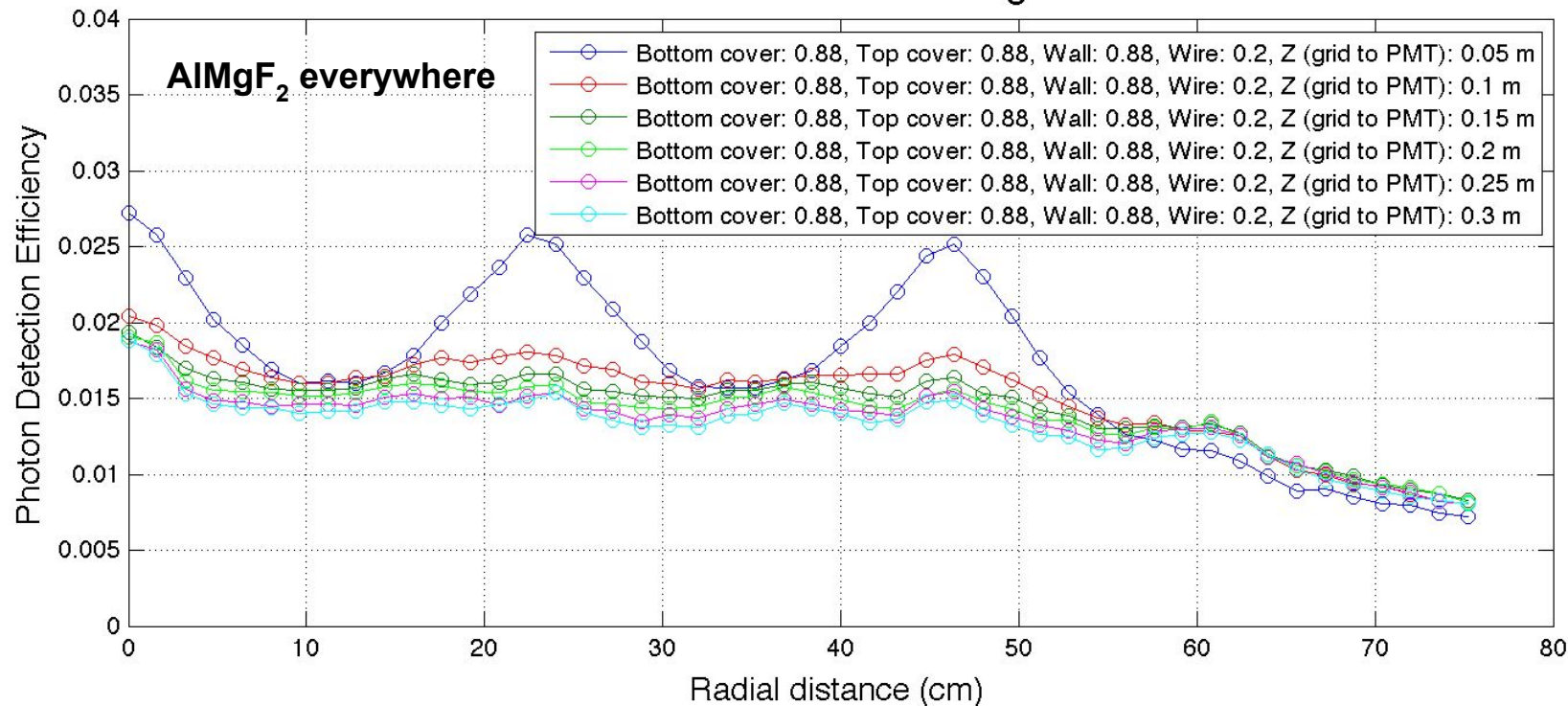


Model of Phase II with 2 layers: Radial and Z sweep



Model Phase II with 2 layers: Radial and Z Sweep

PDE S1 events mid-height

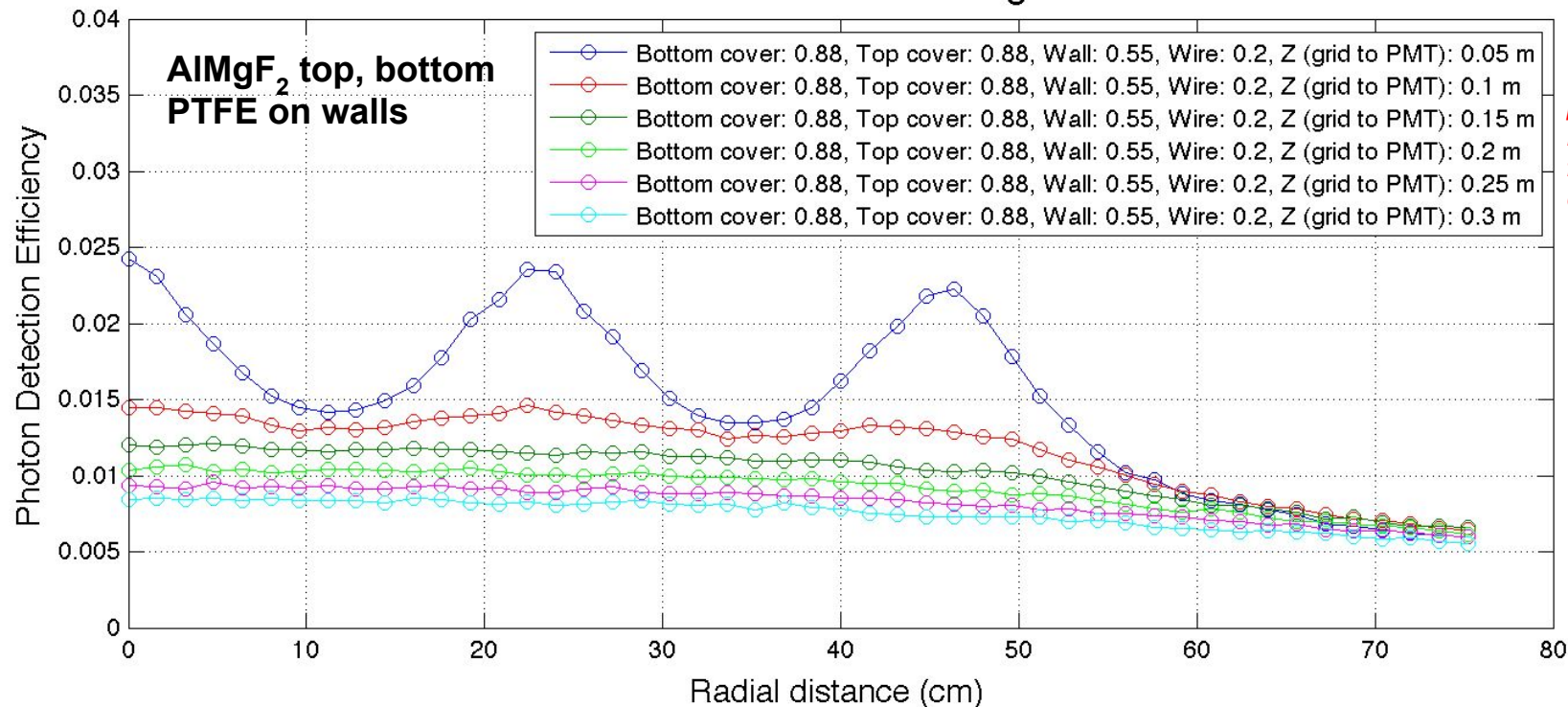


Vary Z position of PMT plane from 5-30 cm.

200,000 photons

Model Phase II with 2 layers: Radial and Z Sweep

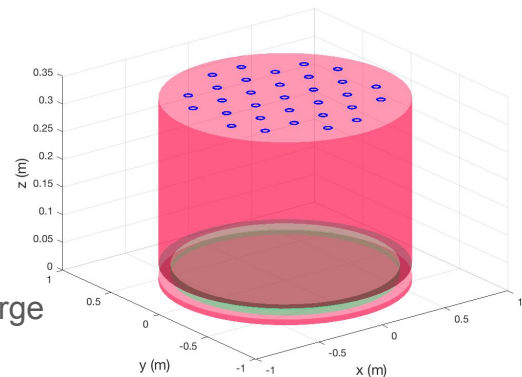
PDE S1 events mid-height



200,000 photons

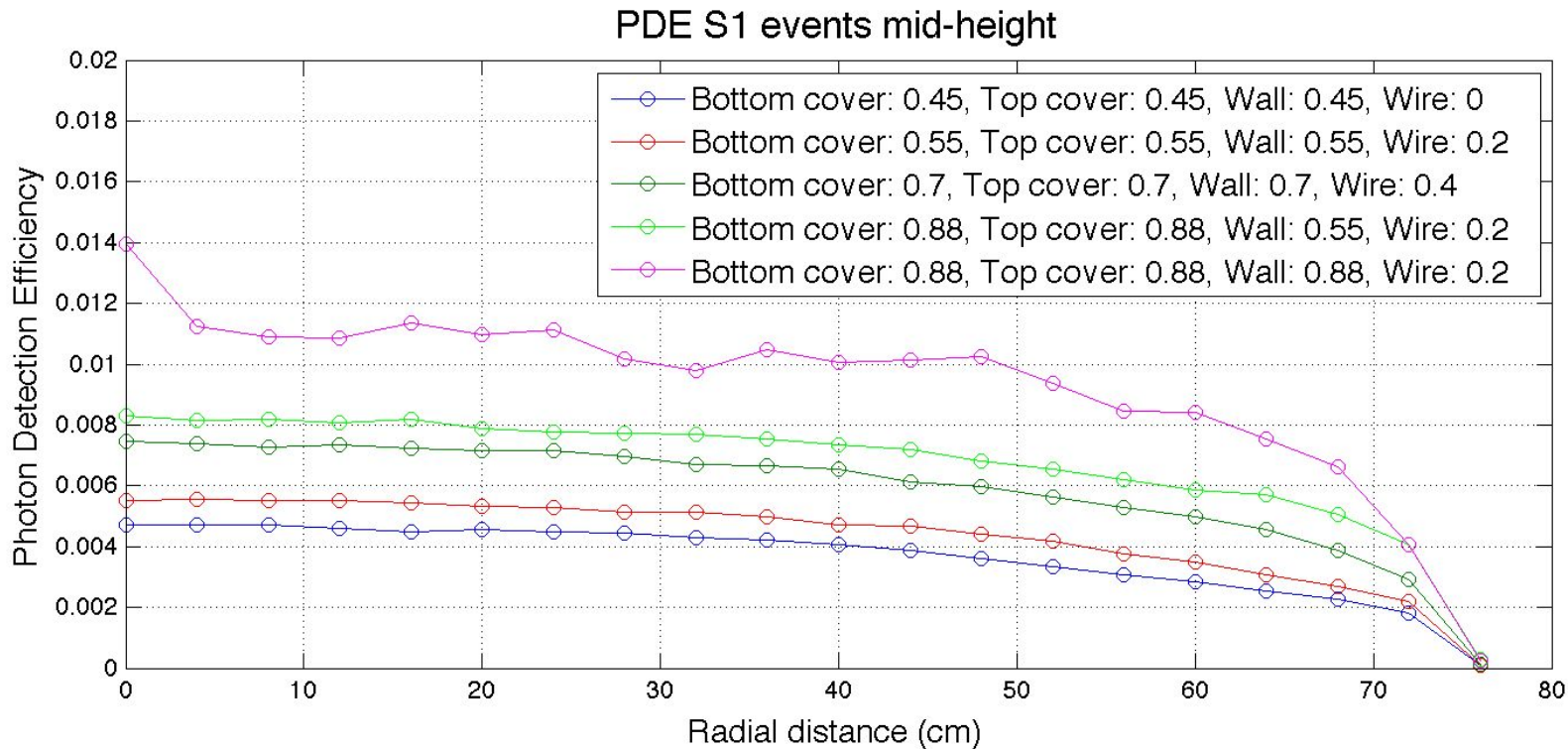
Model of Phase II with 4 layers

- Accounts for light loss from SS grid ring
 - Uses overhangs to consider light loss from gaps between reflective wall at large radius and grid ring at smaller radius
- Grid between layers 2 and 3
- Radii of layers based on Phase II chamber and cathode ring dimensions
- Using Ryan's StepInLayer file to correct for reflection angle



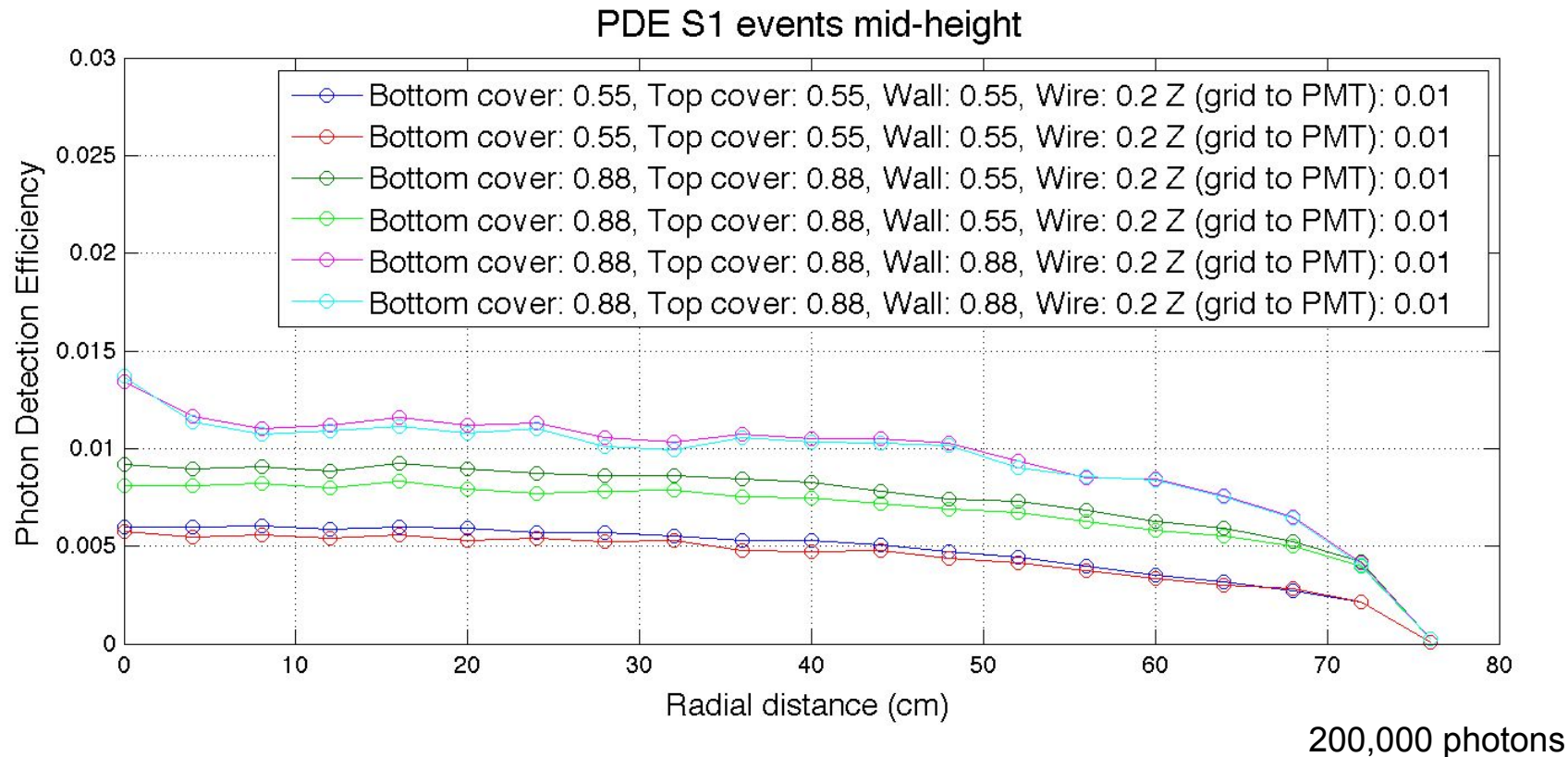
Layer	Name	Wall material	Radius [m]
4	Grid ring to PMTs	PTFE or AlMgF2	1.600 / 2
3	Grid plane to top of grid ring	SS	1.449 / 2
2	Bottom of grid ring to grid plane	SS	1.449 / 2
1	Bottom plate to grid ring	PTFE or AlMgF2	1.600 / 2

Model of Phase II with 4 layers: Radial sweeps

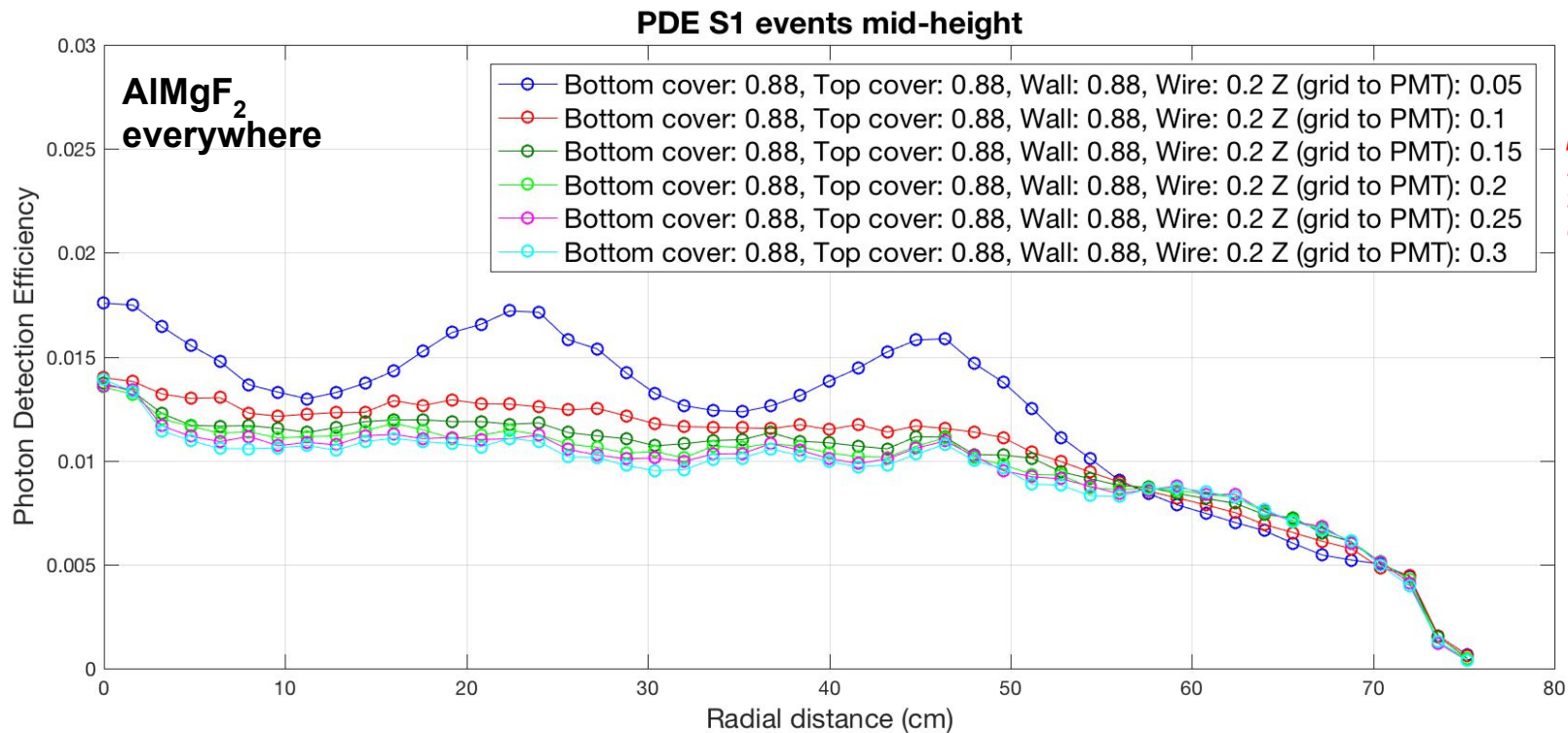


200,000 photons

Model of Phase II with 4 layers: Radial and Z sweep



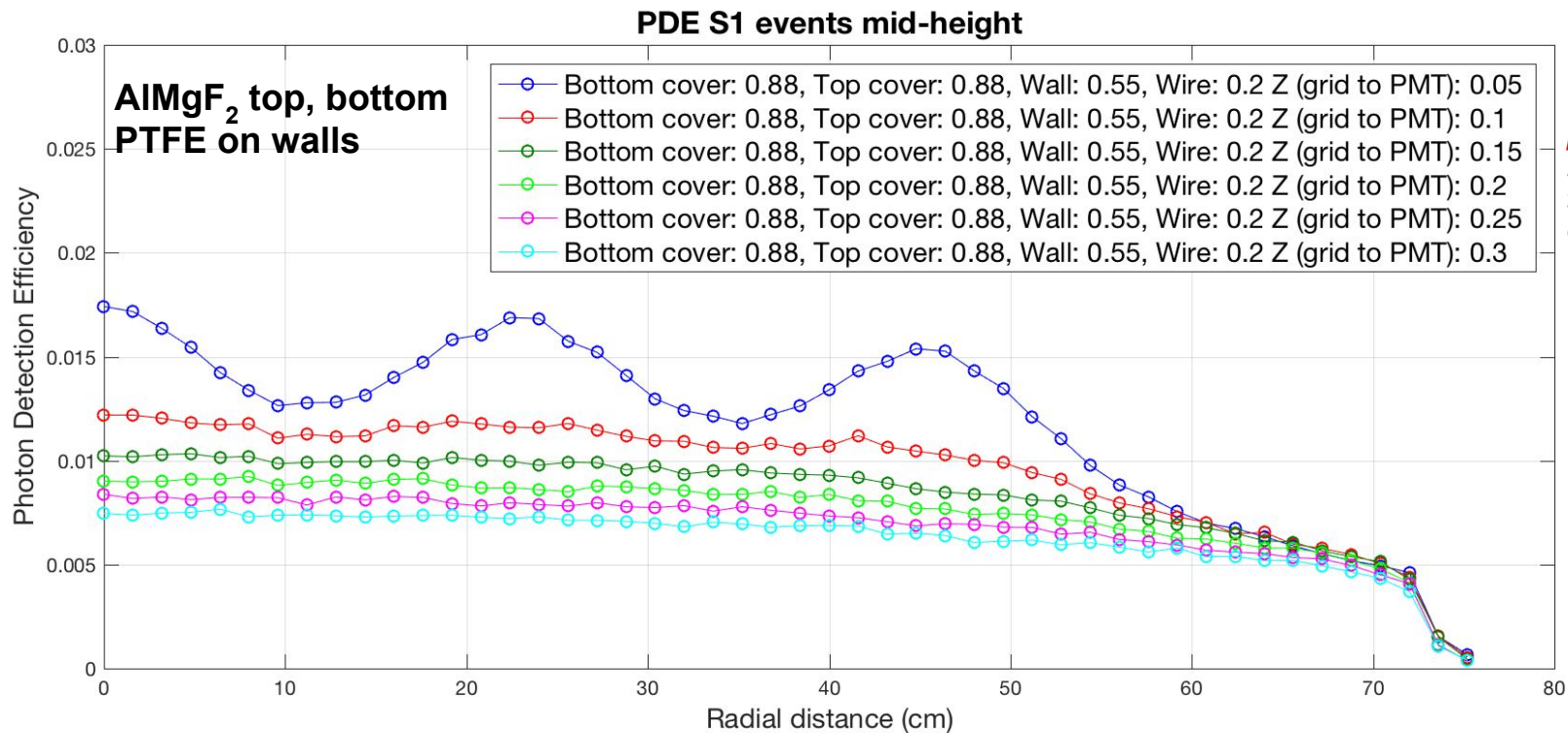
Model Phase II with 4 layers: Radial and Z Sweep



Vary Z position of PMT plane from 5-30 cm.

200,000 photons

Model Phase II with 4 layers: Radial and Z Sweep



*Vary Z
position of
PMT plane
from 5-30
cm.*

200,000 photons