

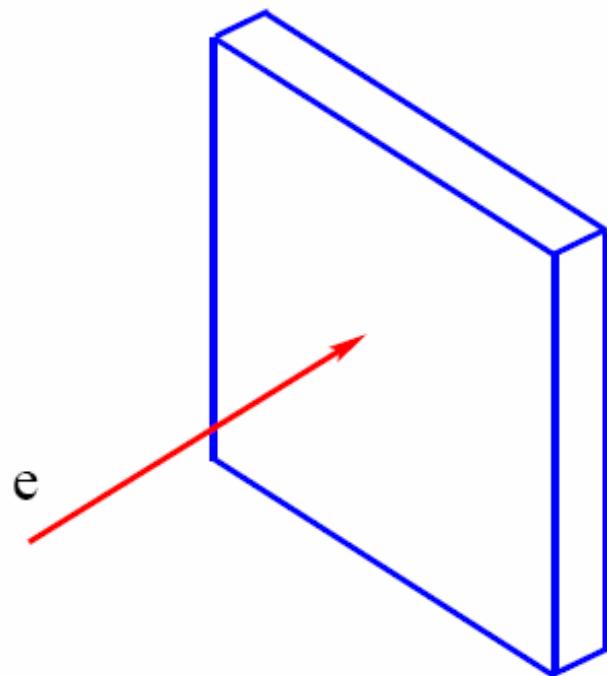
# Geant4 simulation on the barrel SciTil detector

*V.Vikhrov*

PANDA collaboration meeting, Protvino  
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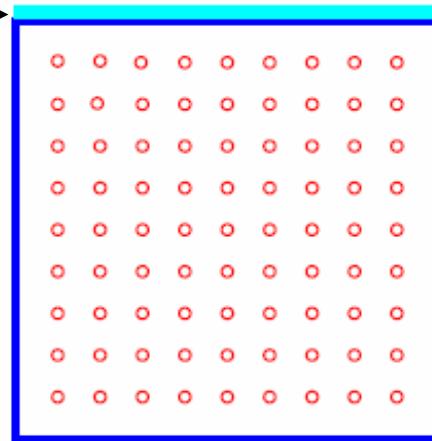
# GEANT-4

BC 408  $28.5 \times 28.5 \times 5 \text{ mm}^3$



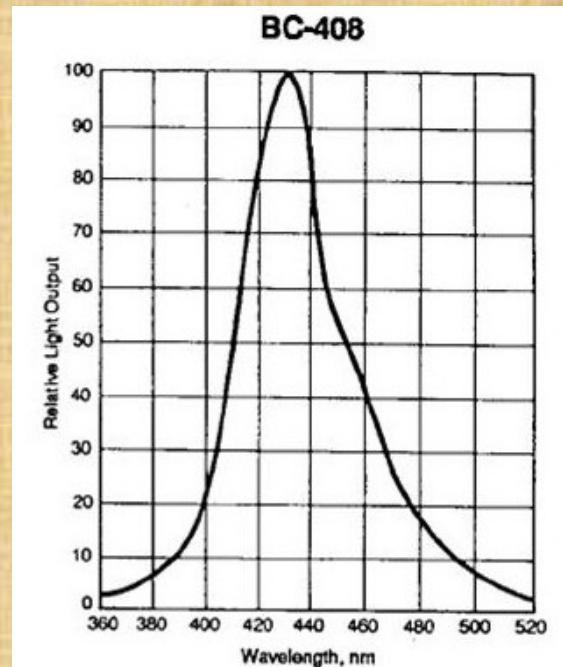
Optical grease

BC 630  $28.5 \times 3 \times 0.5 \text{ mm}^3$



# GEANT4 input parameters

- Scintillator -BC408
- Photon energy spectrum
- Rise time – 0.9 ns
- Decay time – 2.1 ns
- Light attenuation length – 210 cm
- Refractive index – 1.58
- Scintillation yields – 10000 ph/MeV



- Optical grease -BC630
- Refractive index – 1.465

# G4 Optical photons

Scintillation process only (no Cerenkov Photons)

G4OpAbsorption –light attenuation

G4OpRayleigh - Rayleigh scattering

G4OpBoundaryProcess :

dielectric - dielectric

total internal reflection

Fresnel reflection

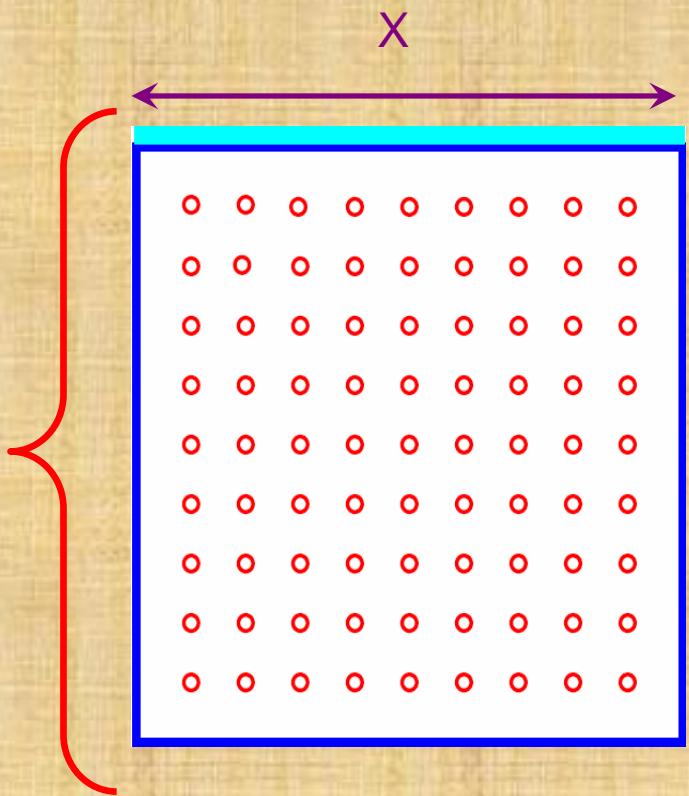
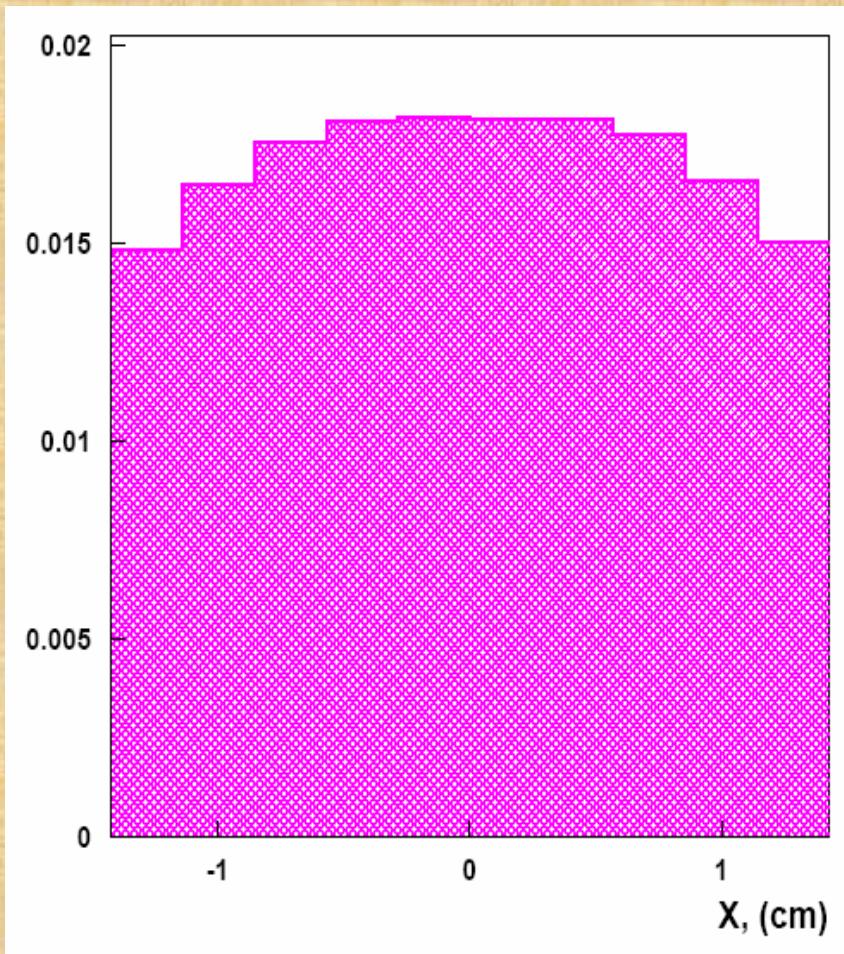
Fresnel refraction

dielectric – metal

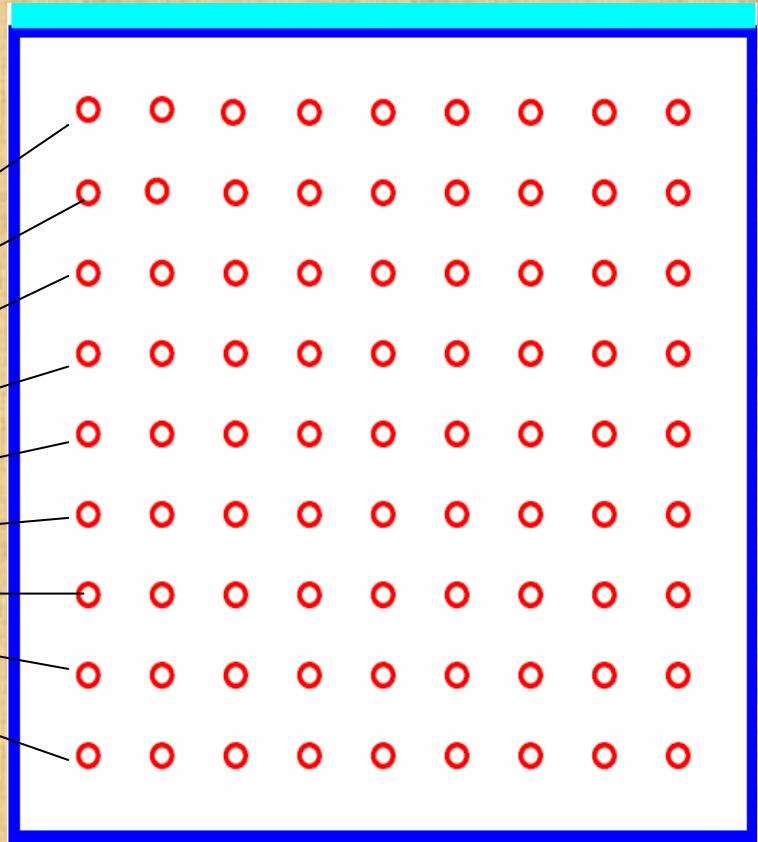
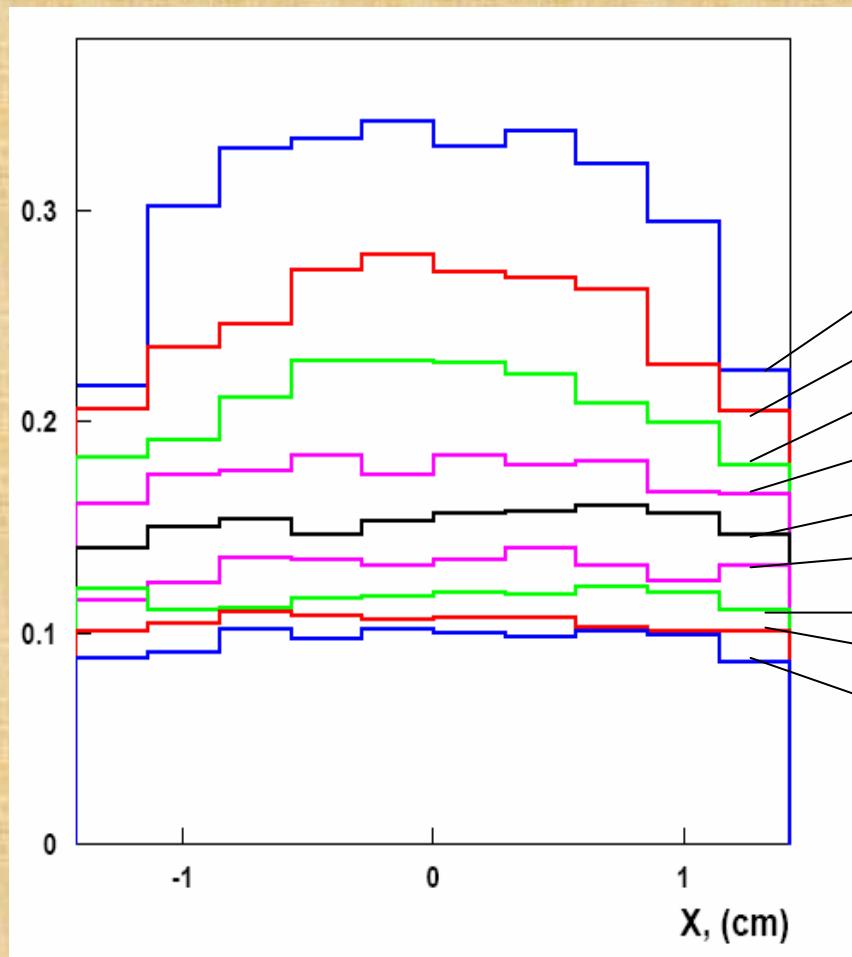
G4OpticalSurface :

polished

# Average geometrical efficiency

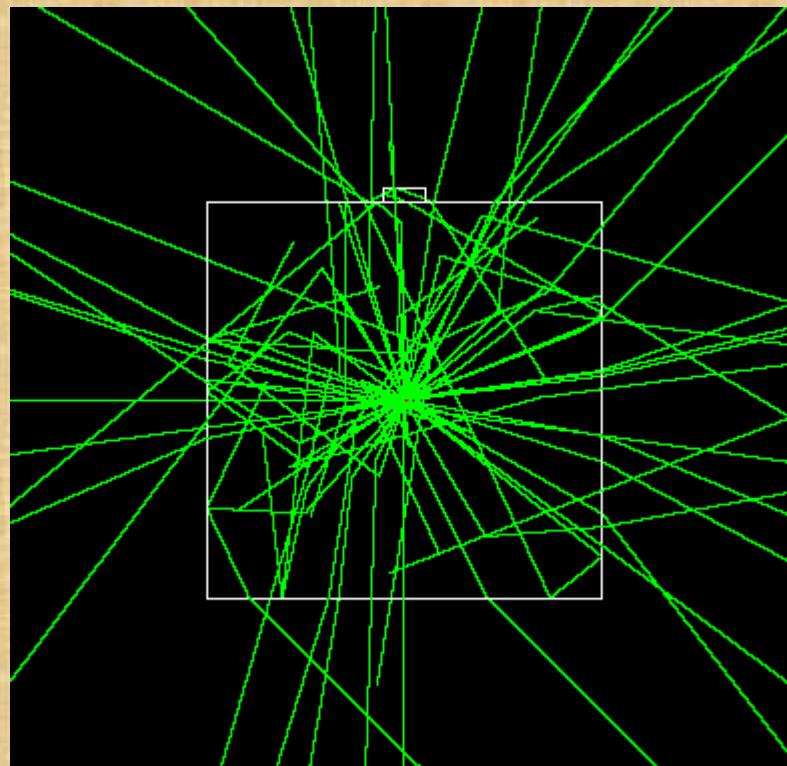


# geometrical efficiency (layer by layer)

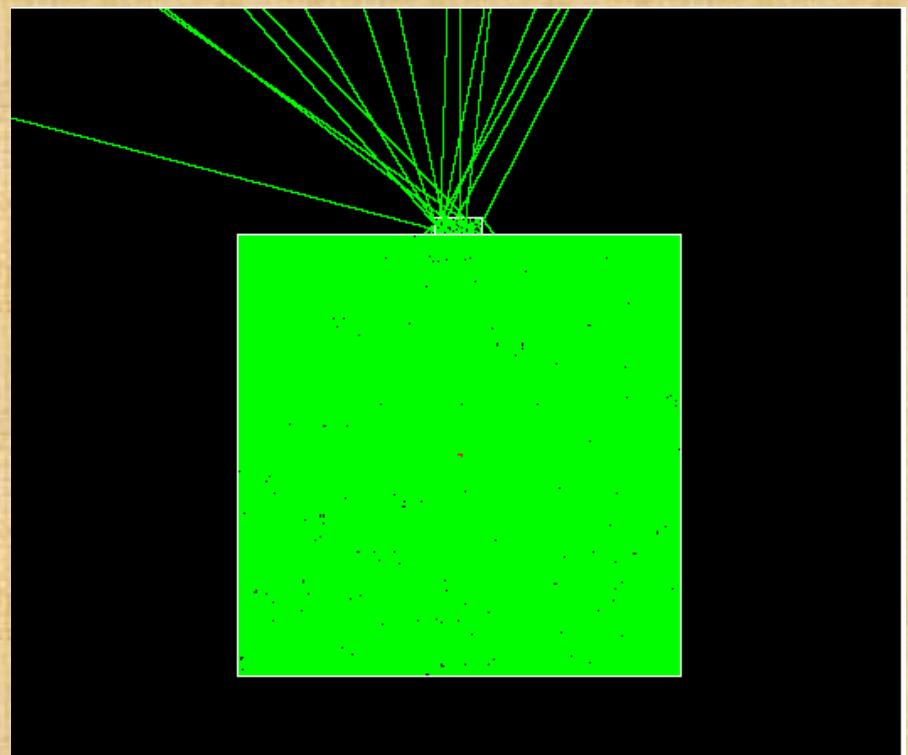


# Light propagation

No wrapping

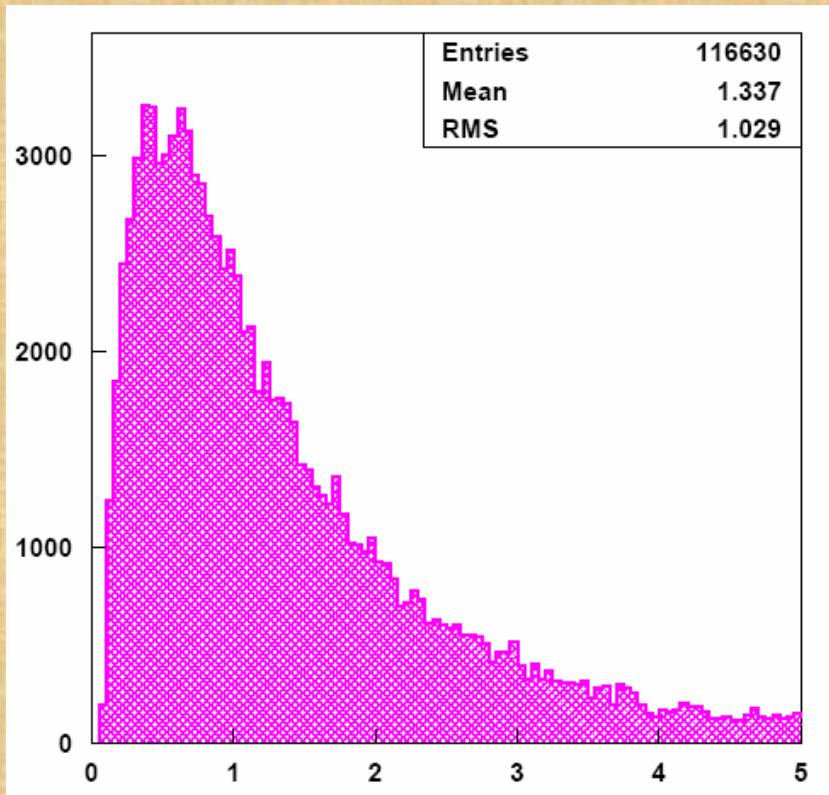


With aluminum wrapping



# Geant time

No wrapping



With aluminum wrapping

