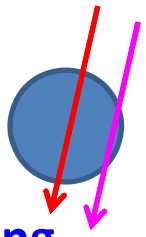
Sci-Fi Fiber light yield expectation?

- **What should expect (dynamic range?)**
  - 2mm BC-408 10^4 γ/MeV dE/dx
  - Density: ρ = 1.023 g/cm^3
  - X' ~ 0.2 g/cm^2
  - Most prob. <Eloss>: E ~ 0.4 MeV
  - Photon yield: ~ 4x10^3 γ
  - Capture %: ~ 4%
  - Detectable: ~ 160 γ
  - Expectation (25% PDE): ~ 40 γ

- **Concerns/options**
  - Spray of 96% of γ not captured = cross-talk?
  - Paint with TiO_2 ?
  - Gain to set MPPC to?
  - Use analog to improve tracking resolution?



Classical Examples	decay time (ns)	λ (nm)	γ per MeV dE/dx	X_0 (cm)
NE-104	2	400	1×10^4	40
BC-408	2	425	1×10^4	40

- The typical value of energy losses at the minimum is about 2 MeV/(g/cm^2).