

DualReadout Calorimeter Geant4 Simulation

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updates

Added on/off flag for wrapping

Added optical filter UG11 and on/off flag

At present, optical photons are not counted correctly when rotating the crystal.

BGO optical properties

Property	reference	Values	“precision”
Refractive index	refractiveindex.info	1.23 eV – 4.06 eV 1008 nm – 305 nm	101 points
Scintillation spectrum	Lab measurement on EPIC-CRYSTAL	1.37 eV – 3.86 eV 905 nm – 321 nm	1160 points
Absorption length	Lab measurement on EPIC-CRYSTAL	1.77 eV – 6.199 eV 700 nm- 200 nm	492 points
Scintillation yield	Literature	8500 ph/MeV	
$\tau_1 \tau_2$	Marcello's measurements on SICCAS	50ns , 320 ns	

BSO optical properties

Property	reference	Values	“precision”
Refractive index	refractiveindex.info	1.23 eV – 4.06 eV 1008 nm – 305 nm	101 points
Scintillation spectrum	Lab measurement on EPIC-CRYSTAL	1.37 eV – 3.76 eV 905 nm – 330 nm	1142 points
Absorption length	Lab measurement on EPIC-CRYSTAL	1,37 eV – 4.92 eV 904 nm – 252 nm	651 points
Scintillation yield	Literature	1200 ph/MeV	
$\tau_1 \tau_2$	Marcello's measurements on SICCAS	21ns , 97 ns	

PWO optical properties

Property	reference	Values	“precision”
Refractive index	Lucchini lab measurement	1.0 eV – 3.9 eV 1200 nm – 318 nm	30 points
Scintillation spectrum	Lab measurement on EPIC-CRYSTAL	1.37 eV – 3.76 eV 905 nm – 330 nm	1142 points
Absorption length	Lab measurement on EPIC-CRYSTAL	1.77 eV – 6.199 eV 700 nm- 200 nm	484 points
Scintillation yield	SICCAS datasheet	200 ph/MeV	
τ_1	Marcello's measurements on SICCAS	6 ns	