

Detector Optimization Summary

Metric	Baseline	Optimized	Improvement
Energy Resolution (σ/E)	0.0308 ± 0.0022	0.0529 ± 0.0022	-71.8%
Light Yield (PE/keV)	2.12	3.53	+66.5%
90% Containment (mm)	50	88	+75.0%
PMT Count	30	50	+66.7%
PMT Coverage	1.25	2.08	+66.4%