

Design parameter	Physics Impact	Options	Goal	Result (links and optimal)
Tile size	Spatial resolution	10x10, 5x5, 10x20		
Gross length	Energy resolution / scale	Max out?		
Tile configuration	Energy resolution, dead material = efficiency	SiPM on tile, WSF, wavebars, ...	Maximize light collection	
Z-layer readout	Shower shape for E-resolution / separation		Determine needed channel count in Z or sum layers	
Absorber/scintillator ratio	Interaction lengths			
Absorber material	Interaction lengths + Energy resolution			STEEL
Timing resolution				

nHCAL design optimization

Observable	Physics Motivation	Optimization	Notes	Result
Acceptance / Coverage	Low-x coverage, hermiticity		Limited by envelope?	
Energy resolution & Energy scale	μ vs. π separation for muon channels (vector meson, gamma gamma, ...)	# of layers (int lengths), thickness, light collection		
Low energy neutron detection efficiency	Neutral jets & neutral VETO + improve charged jet energy res/scale			
Spatial resolution	μ vs. π separation, h+h separation for jet measurement	Tile size, layer readout		