

Table 1: Summary of physics objects, baseline event selections, signal and control regions, and event categorization. The categorization schema is defined in full in Table ??.

Physics objects		
Jet	$p_T > 40 \text{ GeV}, \eta < 2.4$	
Photon	$p_T > 25 \text{ GeV}, \eta < 2.4$, isolated in cone $\Delta R < 0.3$	
Electron	$p_T > 10 \text{ GeV}, \eta < 2.4, I^{\text{rel}} < 0.1$ in cone $0.05 < \Delta R(p_T) < 0$	
Muon	$p_T > 10 \text{ GeV}, \eta < 2.4, I^{\text{rel}} < 0.2$ in cone $0.05 < \Delta R(p_T) < 0$	
Single isolated track	$p_T > 10 \text{ GeV}, \eta < 2.4, I^{\text{track}} < 0.2$ in cone $\Delta R < 0.3$	
Baseline event selection		
All-jet final state	Veto events containing photons, electrons, muons, SITs, as defined above	
p_T^{miss} cleaning	Filters related to beam and instrumental effects	
Highest- p_T jet	$0.1 < f_{h^\pm} < 0.95, p_T^1 > 100 \text{ GeV}$	
Energy sums	$H_T > 200 \text{ GeV}, H_T^{\text{miss}} > 200 \text{ GeV}$	
Jets outside acceptance	$H_T^{\text{miss}}/p_T^{\text{miss}} < 1.25$, veto events containing jets with $p_T > 40 \text{ GeV}$ and $ \eta > 2.4$	
Signal region		
Baseline selection +		
α_T threshold (H_T range)	0.65 (200–250 GeV), 0.60 (250–300), 0.55 (300–350), 0.53 (350–400), 0.52 (400–900)	
$\Delta\phi_{\text{min}}^*$ threshold	$\Delta\phi_{\text{min}}^* > 0.5$ ($n_{\text{jet}} \geq 2$), $\Delta\phi_{\text{min}}^{*25} > 0.5$ ($n_{\text{jet}} = 1$)	
Nominal categorization schema		
n_{jet}	1 $\geq 2a$ 2, 3, 4, 5, ≥ 6	(monojet) (a denotes asymmetric, $40 < p_T^1 < 100 \text{ GeV}$) (symmetric, $p_T^1 > 100 \text{ GeV}$)
n_b	0, 1, 2, 3, ≥ 4	(can be dropped/merged vs. n_{jet})
H_T boundaries [GeV]	200, 400, 600, 900, 1200	(can be dropped/merged vs. n_{jet}, n_b)
H_T^{miss} boundaries [GeV]	200, 400, 600, 900	(can be dropped/merged vs. n_{jet}, n_b, H_T)
Simplified categorization schema		
Topology (n_{jet}, n_b)	Monojet-like	$(1 \cap \geq 2a, 0), (1 \cap \geq 2a, \geq 1)$
	Low n_{jet}	$(2 \cap 3, 0 \cap 1), (2 \cap 3, \geq 2)$
	Medium n_{jet}	$(4 \cap 5, 0 \cap 1), (4 \cap 5, \geq 2)$
	High n_{jet}	$(\geq 6, 0 \cap 1), (\geq 6, \geq 2)$
H_T^{miss} boundaries [GeV]	200, 400, 600, 900	
Control regions		
Baseline selection +		
μ + jets (inverted μ veto)	$p_T^{\mu_1} > 30 \text{ GeV}, \eta^{\mu_1} < 2.1, \Delta R(\mu, j_i) > 0.5, 30 < m_T(\vec{p}_T^\mu, \vec{p}_T^{\text{miss}}) < 125 \text{ GeV}$	
$\mu\mu$ + jets (inverted μ veto)	$p_T^{\mu_{1,2}} > 30 \text{ GeV}, \eta^{\mu_{1,2}} < 2.1, \Delta R(\mu_{1,2}, j_i) > 0.5, m_{\mu\mu} - m_Z < 25 \text{ GeV}$	
Multijet-enriched	Sidebands to signal region: $H_T^{\text{miss}}/p_T^{\text{miss}} > 1.25$ and/or $\Delta\phi_{\text{min}}^* < 0.5$	