

Variable for categorization	BDT <sub>Cat.</sub>	$N_b, D_{b\bar{b}}$	$r_{HH}, \delta_{HH}, m_V$	Year split	$N(\text{regions})$	Observable
Signal regions						
MET small-radius	$\kappa_\lambda, \kappa_{2V}$	$N_b \geq 3$	SR+CR	Per year	6	BDT <sub>SvB</sub>
MET large-radius	$\kappa_{2V}$	HP, LP	SR+CR	Per year	6	BDT <sub>SvB</sub>
1L small-radius	$\kappa_\lambda, \kappa_{2V}$	$N_b \geq 3$	SR+CR	Per year	6	BDT <sub>SvB</sub>
1L large-radius	$\kappa_{2V}$	HP, LP	SR+CR	Per year	6	BDT <sub>SvB</sub>
2L	$\kappa_\lambda, \kappa_{2V}$	$N_b = 3$ or 4	SR,CR	Combined	8	BDT <sub>SvB</sub>
FH	$\kappa_\lambda, \kappa_{2V}$	$N_b = 4$	SR	Per year	6	NN <sub>SvB</sub>
Control regions						
MET small-radius	—	$N_b \geq 3$	SB	Per year	3	$p_T(V)$
MET large-radius	—	HP, LP	SB	Per year	6	$m_{H_2}$
1L small-radius	—	$N_b \geq 3$	SB	Per year	3	$p_T(V)$
1L large-radius	—	HP, LP	SB	Per year	6	$m_{H_2}$
2L (DY)	—	$N_b = 3$ or 4	DY CR	Combined	2	$p_T(V)$
2L (TT)	—	$N_b \geq 3$	$t\bar{t}$ CR	Combined	1	$p_T(V)$