Two-loop five-point scattering in QCD

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in collaboration with

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$$A^{(2)}(1,2,3,4,5) = \int [dk_1][dk_2] \sum_T \frac{\Delta_T(\{k\},\{p\})}{\prod_{\alpha \in T} D_\alpha} \qquad (1)$$

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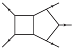
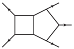
$\Delta\Big($  $\Big) = \mathrm{Cut}\Big($  $\Big) = \sum_{\text{internal states}} \prod^{7} A_3(\{k\},\{p\}) \qquad (2)$

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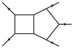
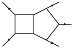
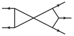
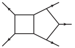
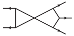
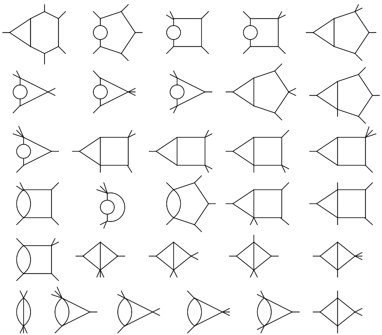
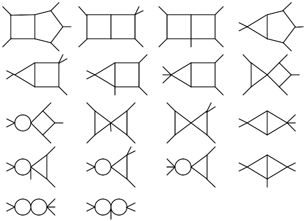
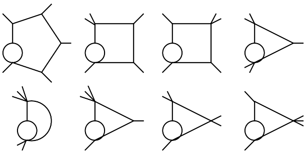
$\Delta\Big($  $\Big) = \mathrm{Cut}\Big($  $\Big) = \sum_{\text{internal states}} \prod^{7} A_3(\{k\},\{p\}) \qquad (2)$

$\Delta\big($  $\big) + \dfrac{\Delta\Big(}{}$  $\dfrac{\Big)}{D_{\text{off-shell}}} = \mathrm{Cut}\big($  $\big) \qquad (3)$







process	flavour	numerical	analytic
	$(d_s-2)^0$	✓	✓
$gg \to gg$	$(d_s-2)^1$	✓	✓
	$(d_s-2)^2$	✓	✓
	$(d_s-2)^0$	✓	✓
$gg \to ggg$	$(d_s-2)^1$	✓	(✓)
	$(d_s-2)^2$	✓	✓
$q\bar{q} \to gg$	$(d_s-2)^0$	✓	✓
$q\bar{q} \to q\bar{q}$	$(d_s-2)^1$	✓	✓
	$(d_s-2)^2$	✓	✓
	$(d_s-2)^0$	✓	
$q\bar{q} \to ggg$	$(d_s-2)^1$	✓	
	$(d_s-2)^2$	✓	