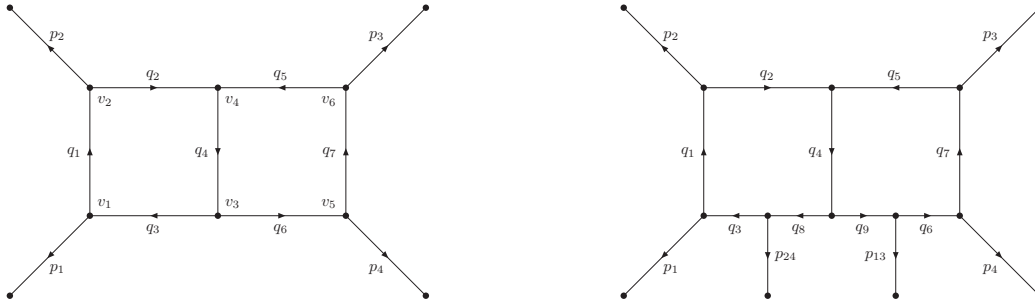


Exercises for the course “Feynman integrals” Sheet 3

Exercise 5

Consider the following double-box graph G and the auxiliary graph \tilde{G} with nine propagators:



Take

$$k_1 = q_3, \quad k_2 = q_6$$

as the independent loop momenta. This exercise is about the family of Feynman integrals

$$I_{v_1 v_2 v_3 v_4 v_5 v_6 v_7 v_8 v_9}$$

with $v_8, v_9 \leq 0$. Assume that all external momenta are light-like ($p_1^2 = p_2^2 = p_3^2 = p_4^2 = 0$) and that all internal propagators are massless. Use one of the public available computer programs Kira, Reduze or Fire to reduce the Feynman integral

$$I_{1111111(-1)(-1)}$$

to master integrals. For the choice of master integrals you may use the default ordering criteria of the chosen computer program.