Exercises for Theoretical Particle Physics II

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Sheet 2, due on May 16

Problem 1: Comption scattering and correlation functions **2 points**

In quantum field theory the fields themselves are not observable phsical objects. However, physical observables can alsways be expressed in terms of correlation functions of the quantum fields. An important example for this is the Lehmann-Symanzik-Zimmermann (LSZ) reduction formula, which relates S-matrix elements to correlation functions. Identify the relevant correlation function(s) required to obtain the matrix element for Compton scattering.

Problem 2: Correlation functions and path integrals **8 points**

Use the path integral formalism to find an expression of the correlation function(s) required to obtain the matrix element for Compton scattering in terms of propagators.