
Mathematical Aspects of QFT

Aim of the course is to outline the mathematical structures which lie at the heart of the following key concepts in quantum field theory:

- Wick ordering, Wick polynomials and the ensuing regularization ambiguities.

- Time ordered product between Wick polynomials and the associated renormalization ambiguities.

The analysis will be performed in coordinate space, rather than in the usual momentum representation and particular attention will be devouted to developing a few applications. Examples in this direction are the construction of the regularized stress-energy tensor, the calculation of the trace anomaly, as well as the derivation of the renormalization group flow. In order to keep the course accessible to as many students as possible, it is only required a basic knowledge of free scalar field theories and of the theory of distributions.

Time Schedule: April – May (24h overall)
Course given by Claudio Dappiaggi