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Introduction

In the previous parts of this book, we have studied different methods based on power corrections, namely renormalons, instantons and the SVZ-expansion in terms of condensates and eventual quadratic corrections, which are one important aspect of non-perturbative QCD. In this part, we shall shortly discuss the other most popular non-perturbative methods used in QCD for studying the low-energy properties of the hadrons and of QCD. These are:

- Lattice gauge theory
- Chiral perturbation theory (ChPT)
- Models of the QCD effective action
- Heavy quark effective theory (HQET)
- Potential approaches for quarkonia.

The method and phenomenology of QCD Spectral Sum Rules (QSSR) which will be discussed in more details will be devoted to a new part. Here, we do not aim to present a complete review and references but we shall limit ourselves to the outline of the general features of the different approaches. A more extensive list of non-perturbative methods, which will not be discussed here, such as the:

- Skyrme model
- Bag models
- Discretized light-cone quantization

can be found in [3]. We shall shortly discuss in the chapter dedicated to the heavy quarks, the two approaches:

- Potential and quark models
- Stochastic vacuum model
- Non-relativistic effective theories

which are discussed in details in some other reviews (see e.g. [51]). We shall complete this part by a short discussion on monopole and confinement.

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