Quantum Field Theory

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Part I

Part II

1. Goals, parable on violation of scale invariance by QM
2. Beta function; a simple example of perturbative renormalization
3. First steps towards quantum corrections to the Coulomb force law
4. Electron self energy; self-energy in phi^4 theory
5. Where is the cutoff dependence?
6. QED vertex correction
7. Soft photons
8. Vacuum polarization
9. Spectral density
10. Optical theorem and cutting rules
11. Hadrons with perturbative QCD; Parable on integrating out heavy modes
12. Anderson-Higgs mechanism
13. Interlude on differential forms
14. Gauge fields as connections; fermion path integrals
15. Lattice gauge theory
16. Gauge fixing
17. The QCD beta function
18. Wilsonian RG, briefly
19. Renormalization of composite operators; Callan-Symanzik equation; Introductory words about Effective Field Theory
20. The color of the sky; loops in effective field theory; the Standard Model as an effective field theory

Part III

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