

Examination topics of
Mathematical Introduction to QFT II
Summer Semester 2017/18

1. Proca equation and its quantization.
2. Maxwell equation and its quantization.
3. Various kinds of Feynman propagators for massive and massless vector fields.
4. Energy shift for massive and massless fields.
5. Friedrichs (Wick) diagrams.
6. Feynman diagrams.
7. Diagrams for the energy shift (Goldstone diagrams).
8. The Klein-Gordon equation with a space-time dependent mass term and its quantization.
9. Renormalization by the Pauli-Villars method.
10. Renormalization by dispersion relations.
11. Renormalization by dimensional regularization.