Quantum Field Theory

Instructors: Jaume Guasch Tomeu Fiol

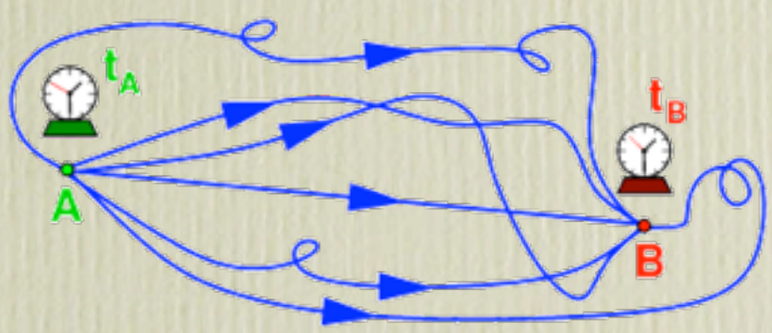
Prerequisites: *"High Energy and Accelerator physics"*

The main idea

- Quantum Mechanics + Special Relativity:
  need of antiparticles, multiparticle state

- Quantum Mechanics + Special Relativity:
  Quantum Field Theory.

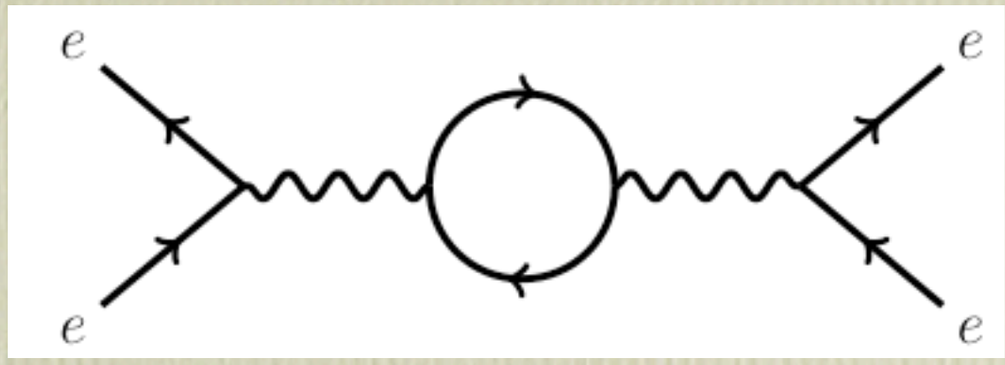
- Various ways to “quantize”: Canonical Quantization, Functional Quantization,....



You will learn...

- How to quantize scalar, fermion and Abelian gauge theories.

- Renormalization.



- Main two examples: $\lambda\phi^4$, QED.

Syllabus

Jaume Guasch

1. Classical Field Theory.

2. Quantization of Free Field Theory.

3. Interacting Field Theory.

Tomeu Fiol

4. Path Integral Quantization.

5. Renormalization.

Bibliography

"An introduction to Quantum Field Theory"
M.E. Peskin and D.V. Schroeder.

"Quantum Field Theory and the Standard Model"
M.D. Schwartz.

Evaluation

There are no exams.

Weekly assignments:

- Homework must reflect your own work.
- To obtain your grade, remove the worst mark and take the average of the remaining ones.

Reevaluation (June): Final Exam