量子物理学・ナノサイエンス第 333 回セミナー

# Gauge invariant dressed S-matrix and decoherence problem in QED

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**日程　：　5 月 18 日（水）16:00–**

**場所　：　本館 2 階 290 物理学系輪講室**

## 概　要

We consider the infrared (IR) aspects of the gauge invariant S-matrix in Quantum electrodynamics (QED). I introduce the dressed state formalism to obtain IR finite S-matrix elements. I explain that the conservation of the asymptotic charge is a necessary condition to obtain IR finite S-matrix elements, and this condition requires appropriate dressed states rather than conventional Fock states. I also explain that IR divergences are also necessary to prohibit non-conservation of the asymptotic charges. We also argue a decoherence problem in the inclusive computations that sum over the final soft photons. We show a relation between this problem, IR divergences, and the asymptotic charges. This talk is based on 1901.09935, 2009.11716, and a paper to appear in collaboration with Hayato Hirai.

**世話人　伊藤　飛鳥（内線 2075）**