

# SNU Physics / IBS-CCES Distinguished Lecture Series

2019. 03. 18. - 03. 21.



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## Field-theory approach to quantum many-body systems

Quantum field theory describes universal low-energy phenomena in quantum many-body systems, and often leads to new concepts in condensed matter physics.

On the other hand, quantum many-body systems provide concrete realization of field theories and can be useful to gain insights into field theory.

In this lecture, I will discuss several useful interchanges between field theory and quantum many-body systems, such as physical consequences of anomaly in condensed matter physics.

### 03. 18. (Mon)

Lecture I (10:00~12:00) : Bosonization of 1D systems and Tomonaga-Luttinger Liquid

Lecture II (13:30~15:30) : Bosonization approach to "Haldane gap"

**Bldg. 25-1, 1st floor**  
**International conference room**

### 03. 19. (Tue)

Lecture III (10:00~12:00) : Commensurability and Lieb-Schultz-Mattis theorem

Lecture IV (13:30~15:30) : Bulk-boundary correspondence

**Bldg. 25-1, 1st floor**  
**International conference room**

### 03. 20. (Wed)

Lecture V (10:00~12:00) : Chiral anomaly and condensed matter physics

Lecture VI (13:30~15:30) : Polarization of quantum many-body systems

**Bldg. 500**  
**Mokam Hall**

### 03. 21. (Thu)

Lecture VII (10:00~12:00) : Anomaly and symmetry-protected topological phases

Lecture VIII (13:30~15:30) : Towards a systematic understanding of gapless critical phases

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**International conference room**

