

復旦大學



优秀学生培养计划暑期课程

Predictive Design of Advanced Materials for Clean Energy and Quantum Information

日期：7月12日--7月24日

地点：复旦大学物理系

主讲：张振宇(中国科技大学合肥微尺度国家实验室)

龚新高（复旦大学物理系）

课程简介：

This mini-course will provide the background and a set of highly illustrative examples of how computational methods are applied to predictive design of materials with desired functionality. The methods will span multi-length and time scales, including first-principles approaches, atomistic simulations, and continuum elasticity theory. Particular emphasis will be given to synergistic research between theory and experiment.

The primary objective of the course is to provide intimate linkages between textbook knowledge and frontier research in condensed matter physics, motivating upper-level undergraduate students to pursue further studies for advanced degrees. The course is also expected to benefit entry-level graduate students in related research areas.

Topics to be covered in the lectures include:

- ☆ Fundamentals of Predictive Design of Materials
- ☆ Atomistic Growth Mechanisms of Thin Films and Nanostructures
- ☆ Metallic Systems: Quantum Growth and Plasmonics
- ☆ Semiconducting Materials: The Beauty of Defects
- ☆ From Weak Interaction to van der Waals Epitaxy
- ☆ Topological Insulators As a New Class of Quantum Materials

