# 博士論文公聴会の公示（物理学専攻）

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論文題目 ： Non-perturbative topological string, Spectral theory, and Condensed matter physics
（非摂動的位相的弦理論、スペクトラル理論、及び物性理論）

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論文要旨:

We study non-perturbative aspects of topological string theory. The non-perturbative effects can be obtained from two methods: one is the duality between the topological string theory and the ABJM theory, the other is the quantization of the mirror curves in the mirror Calabi-Yau manifold. These non-perturbative effects are closely related each other through the quantum mirror map. We call the former completion as the A-model, and the latter completion as the B-model. In the B-model side, the quantization of the mirror curve is almost the same as the Hofstadter model describing dynamics of electrons on a lattice under a magnetic field. In this thesis, first we explain how to define the non-perturbative completion in two methods, and how to relate each other. We next explain the definition of the Hofstadter model, and show some known results. After that, we show that the B-model topological string theory describes the Hofstadter model. These results show that one can study the non-perturbative topological string theory from the well-known condensed matter physics.