

青山学院大学 物理・数理学科 コロキウム

2018年度 第4回

下記の通りコロキウムを企画致しました。学生や分野の違う方にもわかるレベルから始めて下さるようお願いしてあります。どなた様もご自由に是非ご聴講ください（事前参加登録なし）。

（世話人：山本 大輔、連絡先：d-yamamoto@phys.aoyama.ac.jp）

講演者 孫 悦 (Yue Sun) 氏 (青山学院大学理工学部 物理・数理学科)

日時 6月21日（木） 午後4時45分から

場所 青山学院大学 理工学部 L棟6階 L603室

講演題目 Probing the gap structure and pairing mechanism of unconventional superconductors

Although has been discovered more than 100 years, superconductivity is still a very hot topic for both theoretical and application research. However, the mechanism of superconductivity still remains as a puzzle, especially for those “unconventional superconductors” where the Cooper pairs are not simply bound together by electron-phonon coupling. Studying of the superconducting gap structure and the pairing mechanism are pivotal for the mechanism of superconductivity, and instructive for searching high temperature superconductors. In this report, I will talk about my previous research on the gap structure and pairing mechanism of two unconventional superconductors, FeSe and $\text{Sr}_x\text{Bi}_2\text{Se}_3$. FeSe belongs to the family of iron-based superconductors. It attracts much attention because of the intriguing properties, such as the unexpected high T_c (over 100 K in monolayer thin films), nematic state without long-range magnetic order, and a crossover from Bardeen-Cooper-Schrieffer (BCS) to Bose-Einstein condensation (BEC). $\text{Sr}_x\text{Bi}_2\text{Se}_3$ is a topological superconductor, where the interplay between the topological order, the symmetry breaking effect, and the superconductivity may lead to many proposals of novel quantum phenomena such as the anomalous quantum Hall effect, spin-triplet superconductivity, and Majorana fermions. On the other hand, during this talk, I will also introduce two special techniques to probe the gap structure and pairing mechanism of superconductors: the field-angle-resolved specific heat and the disorder effect introduced by particle-irradiation.
