

The Asian Network School and Workshop on Complex Condensed Matter Systems 2018



Contribution ID: 23

Type: not specified

Electronic properties of Monolayer FeSe on CaF_2 via DFT

A recent study on FeSe thin films grown on different substrates revealed that films on CaF_2 substrate has the maximum $T_c \sim 15$ K. However, the monolayer FeSe grown on SrTiO_3 (STO) substrate generated much research interest when superconductivity was observed at T_c above 100 K by means of *in situ* four-point probe electrical transport measurements. There are different factors that were identified, such as the tensile strain and electron doping, which contributed to the enhancement of the T_c . To investigate the interface effect in the superconductivity of monolayer FeSe, we calculated the structural and electronic properties of monolayer FeSe grown on CaF_2 . Only electron pockets are observed around the M point for both NM and AFM configurations. The same feature is observed in experimental studies on 1ML FeSe/STO. This suggests that the mechanism of superconductivity of single-layer FeSe on STO and CaF_2 might be the same. However, further experimental research on 1ML FeSe/ CaF_2 is necessary to verify our results.

Primary authors: Ms JACOSALEM, Naomi Jane (Mindanao State University - Iligan Institute of Technology); Dr AMBOLODE, Leo Cristobal II (Mindanao State University - Iligan Institute of Technology)

Presenter: Ms JACOSALEM, Naomi Jane (Mindanao State University - Iligan Institute of Technology)

Track Classification: School