

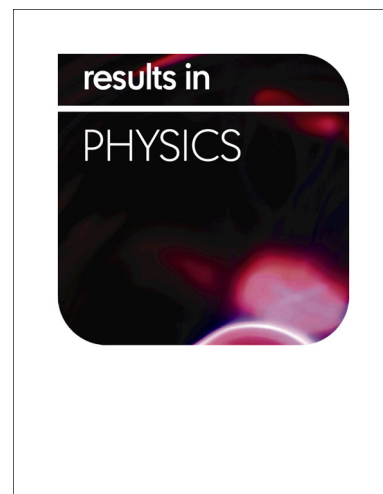
Accepted Manuscript

The correlation between superconductivity and ferromagnetism in superconductor-ferromagnet heterostructures

Shih-Jye Sun, Hsiung Chou

PII: S2211-3797(18)31578-X
DOI: <https://doi.org/10.1016/j.rinp.2018.08.048>
Reference: RINP 1638

To appear in: *Results in Physics*



Please cite this article as: Sun, S-J., Chou, H., The correlation between superconductivity and ferromagnetism in superconductor-ferromagnet heterostructures, *Results in Physics* (2018), doi: <https://doi.org/10.1016/j.rinp.2018.08.048>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

in superconductor-ferromagnet heterostructures

Shih-Jye Sun^{1,2*} and Hsiung Chou^{2,1}

¹*Department of Applied Physics, National University of Kaohsiung,
Kaohsiung 811, Republic of China, Taiwan*

²*Department of Physics, National Sun Yat-Sen University,
70, Lienhai Road, Gushan District,
Kaohsiung 804, Republic of China, Taiwan*

(Dated: August 13, 2018)

Abstract

The correlation between superconductivity and ferromagnetism through a magnetic coupling at the interface between the heterostructure constructed by high temperature superconductor and ferromagnet layers was theoretically investigated. The investigation results represent a fact that the superconductor and the ferromagnet affect mutually and the increase of the magnetic coupling will simultaneously suppress the ferromagnetism and the superconductivity. The dominant mechanism of the result is owing to the carrier exchange between both layers determined by the magnetic coupling strength and each layer's orbital energy. The increase in the number of carriers will enhance the superconductivity as well as the ferromagnetism but with too many of carriers in the ferromagnet, the ferromagnetism will be suppressed by over spin screening.

Corresponding author email: sjs@nuk.edu.tw

Download English Version:

<https://daneshyari.com/en/article/10136912>

Download Persian Version:

<https://daneshyari.com/article/10136912>

[Daneshyari.com](https://daneshyari.com)