

Abstract Submitted
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Josephson Vortex in Indium Monatomic Superconductor on Silicon Terraces¹ TAKUTO KAWAKAMI, International Center for Materials Nanoarchitectonics, National Institute for Materials Science, YUKI NAGAI, CCSE, Japan Atomic Energy Agency, SHUNUSUKE YOSHIZAWA, International Center for Materials Nanoarchitectonics, National Institute for Materials Science, HOWON KIM, The Institute for Solid State Physics, University of Tokyo, TOMONOBU NAKAYAMA, International Center for Materials Nanoarchitectonics, National Institute for Materials Science, YUKIO HASEGAWA, The Institute for Solid State Physics, University of Tokyo, TAKASHI UCHIHASHI, XIAO HU, International Center for Materials Nanoarchitectonics, National Institute for Materials Science — Superconductivity in Indium monatomic layer on a surface of Silicon substrate is intriguing where the terraces and steps exist. Recently, elliptic vortices trapped at steps have been observed by STM/STS measurement under magnetic field [1]. Motivated by this experiment, we clarify the quasiparticle excitation by using Bogoliubov-de Gennes approach [2]. The current distribution and zero energy density of states at vortex core show elliptic shape with longer axis parallel to the step. Moreover, the order parameter is restored at the vortex core. By comparing theoretical results with experiments, we conclude that the recent STS measurement has directly detected Josephson vortex. [1] S. Yoshizawa, *et al.*, *Phys. Rev. Lett.* (in press, arXiv:1405.5953). [2] T. Kawakami, *et al.*, *J. Phys.: Conf. Ser.* (in press).

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Takuto Kawakami
Natl Inst for Materials Sci

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