

Full Publication List (updated on 20th, January, 2020)

1. **Microscopic characterization of superconducting gap function in $\text{Sn}_{1-x}\text{In}_x\text{Te}$**
T. Nomoto, M. Kawamura, T. Koretsune, R. Arita, **T. Machida**, T. Hanaguri, M. Kriener, Y. Taguchi, Y. Tokura
Physical Review B (accepted)
2. **Scalable Majorana vortex modes in iron-based superconductors**
Ching-Kai Chiu, **T. Machida**, Yingyi Huang, T. Hanaguri, Fu-Chun Zhang
Science Advances (accepted)
3. **Zero-energy vortex bound state in the superconducting topological surface state of $\text{Fe}(\text{Se}, \text{Te})$**
T. Machida, Y. Sun, S. Pyon, S. Takeda, Y. Kohsaka, T. Hanaguri, T. Sasagawa, T. Tamegai
Nature Materials **18**, 811 (2019)
4. **A scanning tunneling microscope for spectroscopic imaging below 90 mK in magnetic fields up to 17.5 T**
T. Machida, Y. Kohsaka, T. Hanaguri
Review of Scientific Instruments **89**, 093707 (2018)
5. **Two distinct superconducting pairing states divided by the nematic end point in $\text{FeSe}_{1-x}\text{S}_x$**
T. Hanaguri, K. Iwaya, Y. Kohsaka, **T. Machida**, T. Watashige, S. Kasahara, T. Shibauchi, Y. Matsuda
Science Advances **4**, eaar6419 (2018)
6. **Appearance of a Domain Structure and Its Electronic states in Iron Doped 1T-TaS_2 Observed by Scanning Tunneling Microscopy and Spectroscopy**
Y. Fujisawa, T. Shimabukuro, H. Kojima, K. Kobayashi, **T. Machida**, S. Demura, and H. Sakata
Journal of Physical Society of Japan **86**, 113703 (2017)
7. **Full-gap superconductivity in spin-polarized surface states of topological semimetal $\beta\text{-PdBi}_2$**
K. Iwaya, Y. Kohsaka, K. Okawa, **T. Machida**, M. S. Bahrany, T. Hanaguri, and T. Sasagawa
Nature Communications **8**, 976 (2017)
8. **Orbital-dependent quasiparticle scattering interference in 3R-NbS_2**
T. Machida, Y. Kohsaka, K. Iwaya, R. Arita, T. Hanaguri, R. Suzuki, M. Ochi, and Y. Iwasa
Phys. Rev. B **96**, 075206 (2017)
9. **Spin-orbit scattering visualized in quasiparticle interference**
Y. Kohsaka, **T. Machida**, K. Iwaya, M. Kanou, T. Hanaguri, T. Sasagawa
Phys. Rev. B **95**, 115307 (2017)
10. **Scanning tunneling microscopy and spectroscopy study of the patchwork structure in Pt doped IrTe_2**
Y. Fujisawa, **T. Machida**, K. Igarashi, A. Kaneko, T. Mochiku, S. Ooi, M. Tachiki, K. Komori, K. Hirata, H. Sakata
Physica C **530**, 35-37 (2016)
11. **Change of the Surface Structure by F Doping in BiS_2 -Based Superconductor $\text{CeO}_{1-x}\text{F}_x\text{BiS}_2$**
S. Demura, T. Fujisawa, **T. Machida**, M. Nagao, Y. Takano, H. Sakata
Physics Procedia **81**, 49-52 (2016)
12. **Bipartite electronic superstructures in the vortex core of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$**
T. Machida, Y. Kohsaka, K. Matsuoka, K. Iwaya, T. Hanaguri, T. Tamegai
Nature Communications **7**, 11747 (2016)
13. **Two kinds of in-plane resistivity anisotropy in $\text{Fe}_{1+\delta}\text{Te}$ ($\delta=0.09$) as seen via synchrotron radiation x-ray diffraction and in-situ resistivity measurements**

- T. Nakajima, **T. Machida**, H. Kariya, D. Morohoshi, Y. Yamasaki, H. Nakao, K. Hirata, T. Mochiku, S. Mitsuda, H. Sakata
Physical Review B **91**, 205125 (2015)
14. **Visualizing the Pt doping Effect on Surface and Electronic Structure in $Ir_{1-x}Pt_xTe_2$ by Scanning Tunneling Microscopy and Spectroscopy**
Y. Fujisawa, **T. Machida**, K. Igarashi, A. Kaneko, T. Mochiku, S. Ooi, M. Tachiki, K. Komori, K. Hirata, H. Sakata
Journal of Physical Society of Japan **84**, 043706 (2015)
 15. **“Checkerboard Stripe” Electronic State on Cleaved Surface of $NdO_{0.7}F_{0.3}BiS_2$ Probed by Scanning Tunneling Microscopy**
T. Machida, Y. Fujisawa, M. Nagao, S. Demura, K. Deguchi, Y. Mizuguchi, Y. Takano, H. Sakata
Journal of Physical Society of Japan **83**, 113701 (2014)
 16. **Scanning Tunneling Spectroscopy Study of Impurity Resonance Energy in $Bi_2Sr_2CaCu_2O_{8+\delta}$**
H. Nakamura, **T. Machida**, T. Kato, M. Fujimoto, M. Iguchi, T. Yamasaki, A. Kaneko, S. Ooi, T. Mochiku, K. Hirata, T. Hasegawa, H. Sakata
Journal of Physical Society of Japan **83**, 024702 (2014)
 17. **Crystal Structure of Pt-doped $IrTe_2$ Superconductor**
T. Mochiku, Y. Matsushita, A. Sato, Y. Fujisawa, K. Igarashi, **T. Machida**, H. Sakata, K. Hirata
Physical Procedia **58**, 90-93 (2014)
 18. **On the bad metallicity and phase diagrams of $Fe_{1+\delta}X$ ($X=Te, Se, S$) solid solutions: an electrical resistivity study**
M. El Massalami, K. Deguchi, **T. Machida**, H. Takeya, Y. Takano
Journal of Physics: Conference Series **568**, 022012 (2014)
 19. **Visualizing the effect of structural supermodulation on electronic structure of $IrTe_2$ by scanning tunneling spectroscopy.**
T. Machida, Y. Fujisawa, K. Igarashi, A. Kaneko, S. Ooi, T. Mochiku, M. Tachiki, K. Komori, K. Hirata, H. Sakata
Physical Review B **88**, 245125 (2013)
 20. **Observation of an isosceles triangular electronic structure around the excess iron atoms in $Fe_{1+\delta}Te$**
T. Machida, K. Kogure, T. Kato, H. Nakamura, H. Takeya, T. Mochiku, S. Ooi, Y. Mizuguchi, Y. Takano, K. Hirata, H. Sakata
Physical Review B **87**, 214508 (2013)
 21. **Distribution of the Impurity Resonance Energy $Bi_2Sr_2CaCu_2O_{8+\delta}$ in Observed by Scanning Tunneling Spectroscopy**
H. Nakamura, **T. Machida**, M. Iguchi, Y. Yamasaki, A. Kaneko, H. Kariya, D. Morohoshi, S. Ooi, Y. Mizuguchi, Y. Takano, K. Hirata, H. Sakata
Journal of Superconductivity and Novel Magnetism **26**, 2633-2635 (2013)
 22. **Effect of excess Fe on magnetic properties and crystallographic phases in $Fe_{1+\delta}Te$**
T. Machida, D. Morohoshi, K. Takimoto, H. Nakamura, H. Takeya, T. Mochiku, S. Ooi, Y. Mizuguchi, Y. Takano, K. Hirata, H. Sakata
Physica C **484**, 19-21 (2013)
 23. **Unidirectional Electronic Structure in the Parent State of the Iron-Chalcogenide Superconductor $Fe_{1+\delta}Te$**
T. Machida, K. Kogure, T. Kato, H. Nakamura, H. Takeya, T. Mochiku, S. Ooi, Y. Mizuguchi, Y. Takano, K. Hirata, H. Sakata
Journal of the Physical Society of Japan **81**, 074714 (2012)

24. ***Impurity Resonance States in $\text{Bi}_2\text{Sr}_{1.6}\text{La}_{0.4}\text{CuO}_{6+\delta}$***
H. Nakamura, **T. Machida**, T. Kato, M. Fujimoto, H. Funahashi, M. Iguchi, K. Kogure, T. Yamasaki, S. Ooi, T. Mochiku, S. Nakano, K. Hirata, T. Hazegawa, H. Sakata
Journal of Superconductivity and Novel Magnetism **25**, 1263-1265, (2012)
25. ***One-dimensional electronic order in $\text{Fe}_{1.07}\text{Te}$ probed by scanning tunneling spectroscopy***
T. Machida, K. Kogure, T. Kato, H. Nakamura, H. Takeya, T. Mochiku, S. Ooi, Y. Mizuguchi, Y. Takano, H. Sakata, K. Hirata
Journal of Superconductivity and Novel Magnetism **25**, 1273-1276, (2012)
26. ***Quantum interference of impurity bound states in $\text{Bi}_2\text{Sr}_2\text{Ca}(\text{Cu}_{1-x}\text{Zn}_x)_2\text{O}_{8+\delta}$ probed by scanning tunneling spectroscopy***
T. Machida, T. Kato, H. Nakamura, M. Fujimoto, T. Mochiku, S. Ooi, A. D. Thakur, H. Sakata, K. Hirata
Physical Review B **84**, 064501, (2011)
27. ***Impurity-Related Local Density-of-States Modulation in $\text{Bi}_2\text{Sr}_2\text{Ca}(\text{Cu}_{1-x}\text{Zn}_x)_2\text{O}_{8+\delta}$ Probed by Scanning Tunneling Spectroscopy.***
T. Machida, T. Kato, H. Nakamura, M. Fujimoto, T. Mochiku, S. Ooi, H. Sakata, K. Hirata
Journal of Superconductivity and Novel Magnetism **24**, 481-484, (2011)
28. ***Effect of Zn, Ni, and Fe Impurities on $\text{Bi}_2\text{Sr}_{1.6}\text{La}_{0.4}\text{CuO}_{6+\delta}$***
H. Nakamura, H. Funahashi, M. Fujimoto, M. Iguchi, T. Yamasaki, **T. Machida**, T. Kato, H. Sakata
Journal of Superconductivity and Novel Magnetism **24**, 271-273, (2011)
29. ***Disappearance of zinc impurity resonance in large-gap region of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ probed by scanning tunneling spectroscopy***
T. Machida, T. Kato, H. Nakamura, M. Fujimoto, T. Mochiku, S. Ooi, A. D. Thakur, H. Sakata, K. Hirata
Physical Review B **82**, 180507(R), (2010)
30. ***Development of near-field microwave microscope with the functionality of scanning tunneling spectroscopy.***
T. Machida, M. B. Gaifullin, S. Ooi, T. Kato, H. Sakata, K. Hirata
Japanese Journal of Applied Physics **49**, 116701, (2010)
31. ***Microwave Responses on Locally Modified $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ by Near-Field Microwave Microscope***
T. Machida, S. Ooi, M. Tachiki, T. Mochiku, T. Kato, H. Sakata, K. Hirata
Physica C **470**, S1021-S1022, (2010)
32. ***Quasiparticle Density of States in Cuprate Superconductor $\text{Bi}_2\text{Sr}_{2-x}\text{La}_x\text{CuO}_{6+\delta}$ in a Magnetic Field Studied by Scanning Tunneling Spectroscopy***
T. Kato, N. Nakamura, M. Fujimoto, H. Funahashi, **T. Machida**, H. Sakata, S. Nakao, T. Hasegawa
Physica C **470**, S207-S208, (2010)
33. ***Scanning Tunneling Spectroscopy on Overdoped $\text{Bi}_2\text{Sr}_{2-x}\text{La}_x\text{CuO}_{6+\delta}$***
T. Kato, H. Funahashi, H. Nakamura, M. Fujimoto, **T. Machida**, H. Sakata, S. Nakao, T. Hasegawa
Journal of Superconductivity and Novel Magnetism **23**, 771-773, (2010)
34. ***Local density-of-states and superconducting gap in iron chalcogenide superconductor $\text{Fe}_{1+\delta}\text{Se}_{1-x}\text{Te}_x$ observed by scanning tunneling spectroscopy***
T. Kato, Y. Mizuguchi, H. Nakamura, **T. Machida**, H. Sakata, Y. Takano
Physical Review B **80**, 180507(R) (2009)
35. ***Local Measurement of Microwave Response with Tunneling Spectra Using Near-Field Microwave Microscope.***
T. Machida, M. B. Gaifullin, S. Ooi, T. Kato, H. Sakata, K. Hirata
Applied Physics Express **2**, 025006, (2009)

36. ***Spatial Correlation between Gap Distribution and Impurity State in $\text{Bi}_2\text{Sr}_2\text{Ca}(\text{Cu}_{1-x}\text{Zn}_x)_{8+\delta}$ ($x=0.02$)***
T. Machida, M. B. Gaiffulin, T. Mochiku, T. Kato, H. Sakata, K. Hirata
 Journal of Physics: conference series **150**, 052145 (2008)
37. ***Spatial Correlation between the LDOS Modulation and Electronic Inhomogeneity in $\text{Bi}_2\text{Sr}_{2-x}\text{La}_x\text{CuO}_{6+\delta}$***
 T. Kato, **T. Machida**, Y. Kamijo, R. Miyashita, and H. Sakata
 Journal of Physics conference series **150**, 052101 (2009)
38. ***Observation of the Local Density-of-States Modulation in $\text{Bi}_2\text{Sr}_{1.6}\text{Gd}_{0.4}\text{CuO}_{6+\delta}$ by Scanning Tunneling Microscopy***
 R. Saito, N. Tsuji, T. Noguchi, **T. Machida**, T. Kato, H. Sakata
 Physica C **468**, 876-882, (2008)
39. ***Doping Dependence of Superconducting Gap in $\text{Bi}_2\text{Sr}_{2-x}\text{La}_x\text{CuO}_{6+\delta}$ ($x = 0.2, 0.4, 0.6$)***
T. Machida, Y. Kamijo, T. Kato, K. Harada, R. Saito, T. Noguchi, H. Sakata
 International Journal of Modern Physics B **21**, 3227-3229 (2007)
40. ***Spatial Evolution of The Back Ground Conductance in The Tunneling Spectra in $\text{Bi}_2\text{Sr}_{2-x}\text{La}_x\text{CuO}_{6+\delta}$***
 T. Kato, **T. Machida**, Y. Kamijo, K. Harada, R. Saito, T. Noguchi, H. Sakata
 International Journal of Modern Physics B **21**, 3190-3193, (2007)
41. ***Anomalous Energy Gap Evolution in $\text{Bi}_2\text{Sr}_{1.6}\text{La}_{0.4}\text{CuO}_{6+\delta}$***
T. Machida, Y. Kamijo, K. Harada, T. Kato, R. Saito, T. Noguchi, H. Sakata
 Physica C **463-465**, 146-148 (2007)
42. ***Measurement of c-axis Resistivity in Lanthanide Substituted $\text{Bi}_2\text{Sr}_2\text{CuO}_{6+\delta}$***
 K. Harada, **T. Machida**, Y. Kamijo, T. Kato, R. Saito, T. Noguchi, H. Sakata
 Physica C **463-465**, 187-189 (2007)
43. ***Observation of Fine Structure in Local Density-of-States in $\text{La}_{2-x-y}\text{Nd}_y\text{Sr}_x\text{CuO}_4$***
 R. Saito, T. Noguchi, **T. Machida**, T. Kato, H. Sakata
 Physica C **463-465**, 131-133 (2007)
44. ***STM Observation of Local Density-of-States Modulation in Lanthanide Substituted $\text{Bi}_2\text{Sr}_{1.6}\text{Ln}_{0.4}\text{CuO}_{6+\delta}$***
 T. Noguchi, R. Saito, **T. Machida**, T. Kato, H. Sakata
 Physica C **463-465**, 138-140 (2007)
45. ***Modulation of the local density of states in $\text{Bi}_2\text{Sr}_{1.6}\text{La}_{0.4}\text{CuO}_{6+\delta}$ observed by scanning tunneling spectroscopy***
T. Machida, Y. Kamijo, N. Tsuji, K. Harada, T. Kato, R. Saito, H. Sakata
 Physica C **460-462**, 866-867 (2007)
46. ***Gap distribution in overdoped $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ observed by scanning tunneling spectroscopy***
 T. Kato, T. Noguchi, R. Saito, **T. Machida**, H. Sakata
 Physica C **460-462**, 880-881 (2007)
47. ***Pseudogap state in $\text{La}_{1.48}\text{Nd}_{0.4}\text{Sr}_{0.12}\text{CuO}_4$ and $\text{Bi}_2\text{Sr}_{1.6}\text{Gd}_{0.4}\text{CuO}_{6+\delta}$ studied by scanning tunneling spectroscopy***
 R. Saito, N. Tsuji, T. Kato, **T. Machida**, T. Noguchi, H. Sakata
 Physica C **460-462**, 878-879 (2007)
48. ***Tunneling spectroscopic measurement in lanthanide substituted $\text{Bi}_2\text{Sr}_2\text{CuO}_{6+\delta}$***
 Y. Kamijo, **T. Machida**, N. Tsuji, K. Harada, R. Saito, T. Kato, H. Sakata

Physica C **460-462**, 870-871 (2007)

49. *Appearance of new energy gap and periodic local density-of-states modulation in $\text{Bi}_2\text{Sr}_{1.6}\text{La}_{0.4}\text{CuO}_{6+\delta}$*

T. Machida, Y. Kamijo, K. Harada, T. Noguchi, R. Saito, T. Kato, H. Sakata
Journal of the Physical Society of Japan **75**, 083708, (2006)

50. *Local enhancement of zero bias conductance in $\text{Bi}_2\text{Sr}_{1.6}\text{Nd}_{0.4}\text{CuO}_y$*

T. Machida, N. Tsuji, Y. Kamijo, K. Harada, T. Kato, R. Saito, H. Sakata
AIP Conference Proceedings **850**, 515 (2006)

51. *Scanning Tunneling Microscopy and Spectroscopy in Lanthanide Substituted $\text{Bi}_2\text{Sr}_2\text{CuO}_y$*

T. Machida, N. Tsuji, H. Sakata
Physica C **426-431**, 407-410 (2005)