

## Yasuyuki Nakajima

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### EDUCATION

- 2004-2007    Ph.D. (Physics), Department of Physics, University of Tokyo, Japan  
  
Thesis: Anomalous transport properties in quasi-two dimensional heavy fermion systems near a quantum critical point  
Advisor: Prof. Yuji Matsuda
- 2002-2004    M.S. (Physics), Department of Physics, University of Tokyo, Japan  
  
Thesis: Anomalous electronic transport properties in the quantum-critical heavy-fermion superconductor CeCoIn<sub>5</sub>  
Advisor: Prof. Yuji Matsuda
- 1998-2002    B.S. (Physics), Department of Physics, University of Tokyo, Japan

### PROFESSIONAL POSITIONS

- 2016-present    Assistant Professor, Department of Physics, University of Central Florida
- 20012-2016    Postdoctoral Research Associate, Center for Nanophysics and Advance Materials, Department of Physics, University of Maryland, College Park
- 2007-2012    Research Associate (Assistant professor), Department of Applied Physics, University of Tokyo
- 2004-2007    Japan Society for the Promotion of Science Research Fellow

### TEACHING EXPERIENCE

- 2007-2011    Experimental applied physics (laboratory), University of Tokyo

## AWARDS

2004 Japan Society for the Promotion of Science Research Fellowship (DC1)

## GRANTS

2009-2011 Grant-in-Aid for Young Scientists B  
(Japanese Ministry of Education, Culture, Sports, Science and Technology)

2004-2007 Grant-in-Aid for JSPS Fellows (DC1)  
(Japan Society for the Promotion of Science)

## PROFESSIONAL SERVICE

Journal referee: Physical Review Letters, Physical Review B, Nature Communications, Journal of Physics, Physica C

APS March meeting session chair 2015, and program sorter 2014, 2016

Physical Society of Japan program sorting committee 2011 – 2012

## PROFESSIONAL MEMBERSHIPS

American Physical Society

## HIGHLIGHTED WORK

Nature Physics on chiral edge transport in a topological Kondo Insulator.

Science Advances on superconductivity and magnetism in topological half Heusler semimetal, also highlighted in NIST Center for Neutron Research 2015 Annual Report.

Physical Review B on high temperature superconductivity in iron-based superconductors selected as an Editors' suggestion.

Physical Review Letters on two-gap superconductor selected as an Editors' suggestion.

Rapid Communication in Physical Review B on heavy fermion superconductor selected as an Editors' suggestion.

Letter in Journal of Physical Society Japan on heavy fermion superconductor selected as an Editors' choice.

## BOOKS AND REVIEWS

- [1] Y. Nakajima, “Superconductivity in 122 compounds“, in K. Kadowaki *et al.* (Eds), Physics of Vortex states in Superconductors (in Japanese), (Shokabo, Tokyo, Japan, to be published in 2016), Chapter 4.
- [2] Y. Nakajima and T. Tamegai, “Multi-gap superconductivity in ternary-iron silicide  $\text{Lu}_2\text{Fe}_3\text{Si}_5$  (in Japanese)“, *Solid State Physics* **47**, 11 (2012).
- [3] Y. Nakajima, “Non-Fermi liquid behavior in the transport properties of heavy fermion superconductor  $\text{CeMIn}_5$  (M = Co, Rh) (in Japanese)“, *Low Temperature and Materials Sciences* **10**, 15 (2007).
- [4] Y. Nakajima, “Non-Fermi liquid behavior in the transport properties of quasi 2D heavy fermion superconductor  $\text{CeMIn}_5$  (M = Co, Rh) (in Japanese)“, *Solid State Physics* **42**, 107 (2007).

## SELECTED PRESENTATIONS

### Invited talks

- [1] “Chiral edge transport induced by Dirac-electron-mediated ferromagnetic domain walls in topological Kondo insulator  $\text{SmB}_6$ ” APS March Meeting, New Orleans, LA, March 2017.
- [2] “Exploration of novel quantum phases of matter in topological materials, Physics department colloquium at the University of Central Florida, Orlando, Florida, April, 2016.
- [3] “Exploration of novel quantum phases of matter in topological materials, Special Seminar at the University of California, Riverside, California, February, 2016.
- [4] “Superconductivity and magnetism in topological half-Heusler semimetals”, Spin-Orbit Coupling & Relativistic Quantum Materials Summer School, Vancouver, Canada, October, 2015.
- [5] “Specific heat studies of non-Fermi liquid quantum critical iron pnictide metal  $\text{Ba}(\text{Fe},\text{Ni},\text{Co})_2\text{As}_2$ ”, The Seventieth Calorimetry Conference, Baltimore, Maryland, July, 2015.
- [6] “One-dimensional edge state transport in a topological Kondo insulator”, International Workshop on Heavy Fermions and Quantum Phase Transitions, Hangzhou, China, April, 2015.

## Oral presentations

- [1] "Non-Fermi liquid behavior in quantum critical iron-pnictide metal  $\text{Ba}(\text{Fe,Ni,Co})_2\text{As}_2$ ", APS March Meeting, Baltimore, MD, March, 2016.
- [2] "One-dimensional chiral edge transport in a topological Kondo insulator ", Physical Phenomena at High Magnetic Fields 8, Tallahassee, FL, January, 2016.
- [3] "Enhancement of transition temperature in iron based superconductor  $\text{KFe}_2\text{As}_2$  under pressure", APS March Meeting, San Antonio, TX, March, 2015.
- [4] "Low-temperature magnetotransport in a Kondo insulator  $\text{SmB}_6$ ", APS March Meeting, Denver, CO, March, 2014.
- [5] "Transport and thermodynamic properties of topological semimetal candidate  $\text{RPdBi}$  (R:rare earth)", APS March Meeting, Baltimore, MD, March, 2013.
- [6] "Non-magnetic impurity effect on suppression of  $T_c$  and gap evolution in the two-gap superconductor  $\text{Lu}_2\text{Fe}_3\text{Si}_5$ ", International Superconductivity Symposium, Tokyo, Japan, October, 2011.
- [7] "Suppression of the Critical Temperature of Superconducting  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$  by Point Defects From Proton irradiation", Yukawa Institute Workshop on Iron-based High Temperature Superconductors, Kyoto, Japan, June, 2011.
- [8] "Suppression of critical temperature in proton irradiated  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ ", APS March Meeting, Dallas, TX, March, 2011.
- [9] " $\text{H}^+$  irradiation effect in Co-Doped  $\text{BaFe}_2\text{As}_2$  single crystals", International Superconductivity Symposium, Tsukuba, Japan, November, 2010.
- [10] "Critical Current Densities and Flux Creep Rate in Co-Doped  $\text{BaFe}_2\text{As}_2$  with Columnar Defects Introduced by Heavy-Ion Irradiation", International Superconductivity Symposium, Tsukuba, Japan, November, 2009.
- [11] "Anomalous upper critical field of two-gap superconductor  $\text{Lu}_2\text{Fe}_3\text{Si}_5$ ", APS March Meeting, Pittsburgh, PA, March, 2009.
- [12] "Anomalous Upper Critical Field in Ternary-Iron Silicide Superconductor  $\text{Lu}_2\text{Fe}_3\text{Si}_5$ ", International Superconductivity Symposium, Tsukuba, Japan, November, 2008.
- [13] "Specific Heat Study of Ternary-Iron Silicide Superconductor  $\text{Lu}_2\text{Fe}_3\text{Si}_5$ : Evidence for Two-Gap Superconductivity", International Superconductivity Symposium, Tsukuba, Japan, November, 2007.
- [14] "Evolution of the Hall effect in  $\text{CeCoIn}_5$ ; non-Fermi to Fermi liquid crossover", APS March Meeting, Los Angeles, CA, March, 2005.

[15] "Anomalous electronic transport properties in the quantum critical heavy fermion superconductor CeCoIn<sub>5</sub>", APS March Meeting, Montreal, Canada, March, 2004.

## Poster presentations

- [1] "Magneto-transport properties in topological semimetal candidate RPdBi", International Conference on Strongly Correlated Electron Systems, Tokyo, Japan, August, 2013.
- [2] "Low-temperature specific heat and upper critical field in two-gap superconductor Lu<sub>2</sub>Fe<sub>3</sub>Si<sub>5</sub>", International Conference on Materials and Mechanisms of Superconductivity, Washington, DC, August, 2012.
- [3] "Enhancement of Thermal Conductivity in the Superconducting State of Co-doped BaFe<sub>2</sub>As<sub>2</sub>", International Conference on Low Temperature Physics, Beijing, China, August, 2011.
- [4] "Effect of Proton Irradiation on Co-doped BaFe<sub>2</sub>As<sub>2</sub>", International Workshop on Novel Superconductors and Super Materials, Tokyo, Japan, March, 2011.
- [5] "Doping Dependence of Magnetic and Transport Properties in Single Crystalline Co-Doped BaFe<sub>2</sub>As<sub>2</sub>", International Conference on Materials and Mechanisms of Superconductivity, Tokyo, Japan, September, 2009.
- [6] "Magneto-Optical Imaging of Iron-Oxypnictide Superconductor LaFeAs(O,F)", International Conference on Materials and Mechanisms of Superconductivity, Tokyo, Japan, September, 2009.
- [7] "Low-Temperature Specific-Heat Study of R<sub>5</sub>Ir<sub>4</sub>Si<sub>10</sub> (R=Sc, Lu)", International Conference on Low Temperature Physics, Amsterdam, Nederland, August, 2008.
- [8] "Real Space Observation of Magnetic Domain Structure at Metamagnetic Transition in a Triple-Layered Ruthenate Sr<sub>4</sub>Ru<sub>3</sub>O<sub>10</sub>", International Conference on Low Temperature Physics, Amsterdam, Nederland, August, 2008.
- [9] "Specific Heat Study of Ternary-Iron Silicide Superconductor Lu<sub>2</sub>Fe<sub>3</sub>Si<sub>5</sub>", International Symposium on High Magnetic Field Spin Science in 100T, Sendai, Japan, November, 2007.
- [10] "Hall effect in the quasi two-dimensional strongly correlated metal CeMIn<sub>5</sub> (M=Co, Rh)", International Conference on Magnetism, Kyoto, Japan, August, 2006.
- [11] "Unusual Hall effect in quasi two-dimensional strongly correlated metal CeMIn<sub>5</sub> (M=Co, Rh, Ir)", International Conference on Materials and Mechanisms of Superconductivity, Dresden, Germany, July, 2006.

## List of Publications

## Journal articles

- [1] **Y. Nakajima**, P. Syers, X. Wang, R. Wang, and J. Paglione, *One-dimensional edge state transport in a topological Kondo insulator*, Nat. Phys. **12**, 213 (2016).
- [2] X. Wang, C. Roncaioli, C. Eckberg, H. Kim, **Y. Nakajima**, S.R. Saha, P.Y. Zavalij, and J. Paglione, *Tunable electronic anisotropy in single-crystal  $A_2Cr_3As_3$  ( $A = K, Rb$ ) quasi-one-dimensional superconductors*, Phys. Rev. B. **92**, 020508(R) (2015), **\*Editors' suggestion**.
- [3] **Y. Nakajima**, R. Hu, K. Kirshenbaum, A. Hughes, P. Syers, X. Wang, K. Wang, R. Wang, S. Saha, D. Pratt, J. W. Lynn, and J. Paglione, *Topological RPdBi half-Heusler semimetals: a new family of non-centrosymmetric magnetic superconductors*, Sci. Adv. **1**, e1500242 (2015).
- [4] **Y. Nakajima**, R. Wang, T. Metz, X. Wang, L. Wang, H. Cynn, S. T. Wier, J. R. Jeffries, and J. Paglione, *High-temperature superconductivity stabilized by electron-hole interband coupling in collapsed tetragonal phase of  $KFe_2As_2$  under high pressure*, Phys. Rev. B **91**, 060508(R) (2015), **\*Editors' suggestion**.
- [5] Y. Tsuchiya, **Y. Nakajima**, T. Tamegai, S. Nagasawa, and M. Hidaka, *Anisotropic flux penetration into Nb square superconducting networks*, Superconductor Science and Technology **27**, 055008 (2014).
- [6] T. Taen, H. Yagyuda, **Y. Nakajima**, T. Tamegai, O. Ayala-Valenzuela, L. Civale, B. Maierov, T. Kambara, and Y. Kanai, *Observation of lock-in phenomena in heavy-ion-irradiated single crystal of  $Ba(Fe_{0.93}Co_{0.07})_2As_2$* , Phys. Rev. B **89**, 024508 (2014).
- [7] M. Saeed, T. Wazumi, K. Kumagai, **Y. Nakajima**, and T. Tamegai, *NMR Study of Two-Gap Superconductivity in  $Lu_2Fe_3Si_5$* , J. Phys. Soc. Jpn. **82**, 064705 (2013).
- [8] Q.-P. Ding, Y. Tsuchiya, Y. Sun, T. Taen, **Y. Nakajima**, and T. Tamegai, *Anisotropies and Homogeneities of Superconducting Properties in Iron-Platinum-Arsenide  $Ca_{10}(Pt_3As_8)(Fe_{1.79}Pt_{0.21}As_2)_5$* , J. Phys. Soc. Jpn. **81**, 114723 (2012).
- [9] T. Taen, **Y. Nakajima**, T. Tamegai, and H. Kitamura, *Enhancement of critical current density and vortex activation energy in proton-irradiated Co-doped  $BaFe_2As_2$* , Phys. Rev. B **86**, 094527 (2012).
- [10] **Y. Nakajima**, H. Hidaka, T. Nakagawa, T. Tamegai, T. Nishizaki, T. Sasaki, and N. Kobayashi, *Two-band superconductivity featuring different anisotropies in the ternary iron silicide  $Lu_2Fe_3Si_5$* , Phys. Rev. B **85**, 174524 (2012).
- [11] Q.-P. Ding, Y. Tsuchiya, S. Mohan, T. Taen, **Y. Nakajima**, and T. Tamegai, *Magnetic and transport properties of iron-platinum arsenide  $Ca_{10}(Pt_{4-\delta}As_8)(Fe_{2-x}Pt_xAs_2)_5$  single crystal*, Phys. Rev. B **85**, 104512 (2012).

- [12] T. Tamegai, T. Taen, H. Yagyuda, Y. Tsuchiya, S. Mohan, T. Taniguchi, **Y. Nakajima**, S. Okayasu, M. Sasase, H. Kitamura, T. Murakami, T. Kambara, and Y. Kanai, *Effects of particle irradiations on vortex states in iron-based superconductors*, Supercond. Sci. Technol. **25**, 084008 (2012).
- [13] Q.-P. Ding, T. Prombood, Y. Tsuchiya, **Y. Nakajima**, and T. Tamegai, *Superconducting properties and magneto-optical imaging of  $Ba_{0.6}K_{0.4}Fe_2As_2$  PIT wires with Ag addition*, Supercond. Sci. Technol. **25**, 035019 (2012).
- [14] Q.-P. Ding, S. Mohan, Y. Tsuchiya, T. Taen, **Y. Nakajima**, and T. Tamegai, *Magneto-optical imaging and transport properties of FeSe superconducting tapes prepared by the diffusion method*, Supercond. Sci. Technol. **25**, 025003 (2012).
- [15] T. Nishizaki, **Y. Nakajima**, T. Tamegai, and N. Kobayashi, *Surface Structure and Superconductivity in  $Ba(Fe_{0.93}Co_{0.07})_2As_2$  Probed by Scanning Tunneling Microscopy/Spectroscopy*, J. Phys. Soc. Jpn. **80**, 014710 (2011).
- [16] S. Mohan, Y. Tsuchiya, **Y. Nakajima**, and T. Tamegai, *Instability of vortex-antivortex interface in optimally doped  $Ba(Fe_{1-x}Co_x)_2As_2$* , Phys. Rev. B **84**, 180504 (2011).
- [17] Q.-P. Ding, S. Mohan, Y. Tsuchiya, T. Taen, **Y. Nakajima**, and T. Tamegai, *Low-temperature synthesis of  $FeTe_{0.5}Se_{0.5}$  polycrystals with a high transport critical current density*, Supercond. Sci. Technol. **24**, 075025 (2011).
- [18] T. Tamegai, Y. Nakao, S. Mohan, and **Y. Nakajima**, *Experimental demonstration of shrinkage of magnetic domains in a superconductor/ferromagnet bilayer*, Supercond. Sci. Technol. **24**, 024015 (2011).
- [19] **Y. Nakajima**, T. Taen, Y. Tsuchiya, T. Tamegai, H. Kitamura, and T. Murakami, *Suppression of the critical temperature of superconducting  $Ba(Fe_{1-x}Co_x)_2As_2$  by point defects from proton irradiation*, Phys. Rev. B **82**, 220504 (2010).
- [20] S. Mohan, T. Taen, H. Yagyuda, **Y. Nakajima**, T. Tamegai, T. Katase, H. Hiramatsu, and H. Hosono, *Transport and magnetic properties of Co-doped  $BaFe_2As_2$  epitaxial thin films grown on MgO substrate*, Supercond. Sci. Technol. **23**, 105016 (2010).
- [21] Y. Machida, K. Tomokuni, T. Isono, K. Izawa, **Y. Nakajima**, and T. Tamegai, *Possible Sign-Reversing s-Wave Superconductivity in Co-Doped  $BaFe_2As_2$  Proved by Thermal Transport Measurements*, J. Phys. Soc. Jpn. **78**, 073705 (2009).
- [22] W. Malaeb, T. Yoshida, A. Fujimori, M. Kubota, K. Ono, K. Kihou, P. M. Shirage, H. Kito, A. Iyo, H. Eisaki, **Y. Nakajima**, T. Tamegai, and R. Arita, *Three-Dimensional Electronic Structure of Superconducting Iron Pnictides Observed by Angle-Resolved Photoemission Spectroscopy*, J. Phys. Soc. Jpn. **78**, 123706 (2009).
- [23] **Y. Nakajima**, T. Taen, and T. Tamegai, *Possible Superconductivity above 25 K in Single-Crystalline Co-Doped  $BaFe_2As_2$* , J. Phys. Soc. Jpn. **78**, 023702 (2009).

- [24] **Y. Nakajima**, Y. Tsuchiya, T. Taen, T. Tamegai, S. Okayasu, and M. Sasase, *Enhancement of critical current density in Co-doped  $BaFe_2As_2$  with columnar defects introduced by heavy-ion irradiation*, Phys. Rev. B **80**, 012510 (2009).
- [25] T. Taen, Y. Tsuchiya, **Y. Nakajima**, and T. Tamegai, *Superconductivity at  $T_c \sim 14$  K in single-crystalline  $FeTe_{0.61}Se_{0.39}$* , Phys. Rev. B **80**, 092502 (2009).
- [26] R. T. Gordon, M. D. Vannette, C. Martin, **Y. Nakajima**, T. Tamegai, and R. Prozorov, *Two-gap superconductivity seen in penetration-depth measurements of  $Lu_2Fe_3Si_5$  single crystals*, Phys. Rev. B **78**, 024514 (2008).
- [27] **Y. Nakajima**, H. Shishido, H. Nakai, T. Shibauchi, M. Hedo, Y. Uwatoko, T. Matsumoto, R. Settai, Y. Onuki, H. Kontani, and Y. Matsuda, *Magnetotransport properties governed by antiferromagnetic fluctuations in the heavy-fermion superconductor  $CeIrIn_5$* , Phys. Rev. B **77**, 214504 (2008), **\*Editors' suggestion**.
- [28] **Y. Nakajima**, T. Nakagawa, T. Tamegai, and H. Harima, *Specific-Heat Evidence for Two-Gap Superconductivity in the Ternary-Iron Silicide  $Lu_2Fe_3Si_5$* , Phys. Rev. Lett. **100**, 157001 (2008), **\*Editors' suggestion**.
- [29] **Y. Nakajima**, H. Shishido, H. Nakai, T. Shibauchi, K. Behnia, K. Izawa, M. Hedo, Y. Uwatoko, T. Matsumoto, R. Settai, Y. Onuki, H. Kontani, and Y. Matsuda, *Non-Fermi Liquid Behavior in the Magnetotransport of  $CeMIn_5$  ( $M$ : Co and Rh): Striking Similarity between Quasi Two-Dimensional Heavy Fermion and High- $T_c$  Cuprates*, J. Phys. Soc. Jpn. **76**, 024703 (2007).
- [30] **Y. Nakajima**, K. Izawa, Y. Matsuda, K. Behnia, H. Kontani, M. Hedo, Y. Uwatoko, T. Matsumoto, H. Shishido, R. Settai, and Y. Onuki, *Evolution of Hall Coefficient in Two-Dimensional Heavy Fermion  $CeCoIn_5$* , J. Phys. Soc. Jpn. **75**, 023705 (2006), **\*Editors' choice**.
- [31] Y. Kasahara, **Y. Nakajima**, K. Izawa, Y. Matsuda, K. Behnia, H. Shishido, R. Settai, and Y. Onuki, *Anomalous quasiparticle transport in the superconducting state of  $CeCoIn_5$* , Phys. Rev. B **72**, 214515 (2005).
- [32] K. Behnia, R. Bel, Y. Kasahara, **Y. Nakajima**, H. Jin, H. Aubin, K. Izawa, Y. Matsuda, J. Flouquet, Y. Haga, Y. Onuki, and P. Lejay, *Thermal transport in the hidden-order state of  $URu_2Si_2$* , Phys. Rev. Lett. **94**, 156405 (2005).
- [33] **Y. Nakajima**, K. Izawa, Y. Matsuda, S. Uji, T. Terashima, H. Shishido, R. Settai, Y. Onuki, and H. Kontani, *Normal-state Hall angle and magnetoresistance in Quasi-2D heavy fermion  $CeCoIn_5$  near a quantum critical point*, J. Phys. Soc. Jpn. **73**, 5 (2004).
- [34] R. Bel, K. Behnia, **Y. Nakajima**, K. Izawa, Y. Matsuda, H. Shishido, R. Settai, and Y. Onuki, *Giant Nernst effect in  $CeCoIn_5$* , Phys. Rev. Lett. **92**, 217002 (2004).



- [35] K. Izawa, **Y. Nakajima**, J. Goryo, Y. Matsuda, S. Osaki, H. Sugawara, H. Sato, P. Thalmeier, and K. Maki, *Multiple superconducting phases in new heavy fermion superconductor PrOs<sub>4</sub>Sb<sub>12</sub>*, Phys. Rev. Lett. **90**, 117001 (2003).
- [36] K. Izawa, K. Kamata, **Y. Nakajima**, Y. Matsuda, T. Watanabe, M. Nohara, H. Takagi, P. Thalmeier, and K. Maki, *Gap function with point nodes in borocarbide superconductor YNi<sub>2</sub>B<sub>2</sub>C*, Phys. Rev. Lett. **89**, 137006 (2002).

### Conference proceedings

- [1] F. Laviano, R. Gerbaldo, G. Ghigo, L. Gozzelino, T. Taen, **Y. Nakajima**, and T. Tamegai, *Quantitative Magneto-Optical Imaging of Supercurrents in Heavy-Ion Irradiated Cuprate and Pnictide Superconductors*, J. Supercond. Nov. Magn. **26**, 2063 (2013).
- [2] **Y. Nakajima**, H. Hidaka, and T. Tamegai, *Non-magnetic impurity effect on suppression of T<sub>c</sub> and gap evolution in the two-gap superconductor Lu<sub>2</sub>Fe<sub>3</sub>Si<sub>5</sub>*, Physica C **484**, 49 (2013).
- [3] S. Tada, Y. Tsuchiya, **Y. Nakajima**, T. Tamegai, S. Nagasawa, and M. Hidaka, *Flux penetration into three-dimensional superconducting strip array*, Physica C **494**, 113 (2013).
- [4] T. Taen, H. Yagyuda, **Y. Nakajima**, T. Tamegai, S. Okayasu, H. Kitamura, T. Murakami, F. Laviano, and G. Ghigo, *Effects of irradiation-particle energy on critical current density in Co-doped BaFe<sub>2</sub>As<sub>2</sub>*, Physica C **484**, 62 (2013).
- [5] T. Tamegai, Q.-P. Ding, H. Inoue, T. Taen, Y. Tsuchiya, S. Mohan, Y. Sun, T. Prombood, and **Y. Nakajima**, *Magneto-Optical Characterization of Iron-Based Superconducting Wires and Tapes*, IEEE Trans. Appl. Supercond. **23**, 7300304 (2013).
- [6] T. Tamegai, Q.-P. Ding, T. Taen, F. Ohtake, H. Inoue, Y. Tsuchiya, S. Mohan, Y. Sun, **Y. Nakajima**, S. Pyon, and H. Kitamura, *Superconducting properties of iron-platinum-arsenides Ca<sub>10</sub>(Pt<sub>n</sub>As<sub>8</sub>)(Fe<sub>2-x</sub>Pt<sub>x</sub>As<sub>2</sub>)<sub>5</sub> (n = 3, 4)*, Physica C **494**, 65 (2013).
- [7] T. Tamegai, Q.-P. Ding, T. Ishibashi, and **Y. Nakajima**, *Superconducting properties of Ca<sub>1-x</sub>RE<sub>x</sub>Fe<sub>2</sub>As<sub>2</sub> (RE: Rare Earths)*, Physica C **484**, 31 (2013).
- [8] Y. Tsuchiya, **Y. Nakajima**, T. Tamegai, S. Nagasawa, and M. Hidaka, *Origin of diagonal flux penetration into square superconducting networks*, Phys. Procedia **45**, 121 (2013).
- [9] Y. Tsuchiya, **Y. Nakajima**, T. Tamegai, S. Nagasawa, and M. Hidaka, *Anisotropy of critical current density in superconducting networks*, Physica C **484**, 91 (2013).
- [10] Q. Ding, S. Mohan, T. Taen, Y. Tsuchiya, **Y. Nakajima**, and T. Tamegai, *FeSe superconducting tapes with a high critical current density fabricated by diffusion method*, J. Phys. Conf. Ser. **400**, 022016 (2012).

- [11] Q. Ding, T. Prombood, S. Mohan, **Y. Nakajima**, and T. Tamegai, *Fabrication of high-performamnce (Ba,K)Fe<sub>2</sub>As<sub>2</sub> superconducting wires by powder-in-tube method*, Phys. Procedia **27**, 272 (2012).
- [12] T. Ishibashi, **Y. Nakajima**, and T. Tamegai, *Magnetic properties of isovalently doped Ba(Fe<sub>1-x</sub>Ru<sub>x</sub>)<sub>2</sub>As<sub>2</sub>*, Phys. Procedia **27**, 104 (2012).
- [13] S. Mohan, Y. Tsuchiya, **Y. Nakajima**, and T. Tamegai, *Magneto-optical imaging of flux turbulence in Ba(Fe<sub>1-x</sub>Co<sub>x</sub>)<sub>2</sub>As<sub>2</sub> crystals*, J. Phys. Conf. Ser. **400**, 022076 (2012).
- [14] S. Mohan, T. Ishibashi, **Y. Nakajima**, Y. Tsuchiya, and T. Tamegai, *Investigation of flux turbulence in iron-based superconductors*, Phys. Procedia **27**, 100 (2012).
- [15] **Y. Nakajima**, Y. Kurosaki, and T. Tamegai, *Enhancement of thermal conductivity in the superconducting state of Co-doped BaFe<sub>2</sub>As<sub>2</sub>*, J. Phys. Conf. Ser. **400**, 022080 (2012).
- [16] E. S. Otabe, K. Myose, K. Murakami, M. Kiuchi, T. Matsushita, J. Geb, B. Ni, **Y. Nakajima**, and T. Tamegai, *Condensation energy density properties of Ba-122 pnictide superconductor with columnar defects introduced by heavy-ion irradiation*, Phys. Procedia **36**, 693 (2012).
- [17] T. Taen, **Y. Nakajima**, T. Tamegai, S. Okayasu, and M. Sasase, *Effects of swift Xe irradiation in Ba(Fe<sub>1-x</sub>Co<sub>x</sub>)<sub>2</sub>As<sub>2</sub> single crystals*, J. Phys. Conf. Ser. **400**, 022119 (2012).
- [18] T. Tamegai, T. Taniguchi, T. Taen, **Y. Nakajima**, T. Nishizaki, T. Naito, N. Kobayashi, H. Kitamura, and T. Murakami, *Vortex phase diagram of pristine and irradiated Co-doped BaFe<sub>2</sub>As<sub>2</sub>*, J. Phys. Conf. Ser. **400**, 022122 (2012).
- [19] T. Tamegai, Y. Tsuchiya, **Y. Nakajima**, M. Hidaka, and S. Nagasawa, *Imaging of vortex penetration into superconducting square networks*, Physica C **479**, 24 (2012).
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