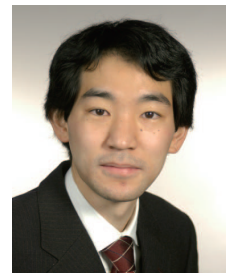


Curriculum Vitae



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 - April 2015 — present: Principal Researcher in NIMS in Tsukuba
 - June 2013 — February 2015: Guest Scientist in MPI in Stuttgart
 - December 2011 — May 2013: Humboldt Research Fellow in MPI in Stuttgart
 - May 2009 — March 2015: Guest Associate Professor in Hokkaido University
 - August 2008 — March 2015: Senior Researcher in NIMS in Tsukuba
 - April 2004 — July 2008: Postdoctoral Researcher in MPI in Stuttgart
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 - April 2001 — March 2004: Special Postdoctoral Researcher in RIKEN, Wako
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 - ”Quasi-one-dimensional picture of Fermi surface
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 - supervisor: Prof. Hidetoshi Fukuyama
 - March 1998: M. S. in Department of Physics in Graduate School of Science, University of Tokyo
 - ”Effects of charge density modulations in high T_c cuprates”
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 - March 1996: B. S. in Department of Physics in Faculty of Science and Technology, Keio University
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 - supervisor: Prof. Reijiro Fukuda
7. Awards:
 - ◇ Humboldt Research Fellowship for experienced researchers (August 2011)
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Publications (Refereed)

¶: representative papers

- (78) M. Homenda, P. Jakubczyk, and H. Yamase
"Generalized Hertz action and quantum criticality of two-dimensional Fermi systems"
submitted on May. 13, 2024
- (77) Muhammad Zafur and H. Yamase
"Spin and bond-charge excitation spectra in correlated electron systems near antiferromagnetic phase"
Phys. Rev. B **109** (2024) 245127-1 - 245127-26.
- (76) M. Bejas, V. Zimmermann, D. Betto, T. D. Boyko, R. J. Green, T. Loew, N. B. Brookes, G. Cristiani, G. Logvenov, M. Minola, B. Keimer, H. Yamase, A. Greco, and M. Hepting
"Plasmon dispersion in bilayer cuprate superconductors"
Phys. Rev. B **109** (2024) 144516-1 - 144516-8.
- (75) H. Yamase, M. Bejas, and A. Greco
"Retaining Landau quasiparticles in the presence of realistic charge fluctuations in cuprates"
Phys. Rev. B **109** (2024) 104515-1 - 104515-9.
- (74) M. Hepting, T. D. Boyko, V. Zimmermann, M. Bejas, Y. E. Suyolcu, P. Puphal, R. J. Green, L. Zinni, J. Kim, D. Casa, M. H. Upton, D. Wong, C. Schulz, M. Bartkowiak, K. Habicht, E. Pomjakushima, G. Cristiani, G. Logvenov, M. Minola, H. Yamase, A. Greco, and B. Keimer
"Evolution of plasmon excitations across the phase diagram of the cuprate superconductor $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ "
Phys. Rev. B **107** (2023) 214516-1 - 214516-18.
- ¶(73) H. Yamase
"Spin-fluctuation glue disfavors high-critical temperature of superconductivity?"
New J. Phys. **25** (2023) 083049.
- ¶(72) H. Yamase, M. Bejas, and A. Greco
"Plasmarons in high-temperature cuprate superconductors"
Commun. Phys. **6** (2023) 168.
- (71) L. Zinni, M. Bejas, H. Yamase, and A. Greco
"Low-energy plasmon excitations in infinite-layer nickelate"
Phys. Rev. B **107** (2023) 014503-1 - 014503-9.
- (70) H. Yamase
"Ferromagnetic and metamagnetic transitions in itinerant electron systems: a microscopic study"
New J. Phys. **25** (2023) 033004.

- (69) H. Yamase
 ”Suppression of superconductivity by spin fluctuations”
 J. Phys. Conf. Ser. **2164** (2022) 012013.
- (68) M. Hepting, M. Bejas, A. Nag, H. Yamase, N. Coppola, D. Betto, M. Garcia-Fernandez, S. Agrestini, K.-J. Zhou, M. Minola, C. Sacco, L. Maritato, P. Orgiani, H. I. Wei, K. M. Shen, D. G. Schlom, A. Galdi, A. Greco, and B. Keimer
 “Gapped collective charge excitations and interlayer hopping in cuprate superconductors”
 Phys. Rev. Lett. **129** (2022) 047001-1 - 047001-8.
- ¶(67) H. Yamase
 ”Theoretical insights into electronic nematic order, bond-charge orders, and plasmons in cuprate superconductors”
 J. Phys. Soc. Jpn. **90** (2021) 111011-1 - 111011-16.
- ¶(66) H. Yamase and M. Zafur
 ”Anomaly of longitudinal spin susceptibility at superconducting instability inside a magnetic phase”
 Phys. Rev. B **103** (2021) 224527-1 - 224527-9.
- ¶(65) H. Yamase, M. Bejas, and A. Greco
 ”Electron self-energy from quantum charge fluctuations in the layered t - J model with long-range Coulomb interaction”
 Phys. Rev. B **104** (2021) 045141-1 - 045141-22.
- ¶(64) H. Yamase, Y. Sakurai, M. Fujita, S. Wakimoto, and K. Yamada
 ”Fermi surface in La-based cuprate superconductors from Compton scattering imaging”
 Nat. Commun. **12** (2021) 2223-1 - 2223-7.
- (63) A. Nag, M. Zhu, M. Bejas, J. Li, H. C. Robarts, H. Yamase, A. N. Petsch, D. Song, H. Eisaki, A. C. Walters, M. García-Fernández, A. Greco, S. M. Hayden, and K.-J. Zhou
 ”Detection of acoustic plasmons in hole-doped lanthanum and bismuth cuprate superconductors using resonant inelastic x-ray scattering”
 Phys. Rev. Lett. **125** (2020) 257002-1 - 257002-6.
- (62) T. Terashima, Y. Matsushita, H. Yamase, N. Kikugawa, H. Abe, M. Imai, S. Uji, S. Ishida, H. Eisaki, A. Iyo, K. Kihou, C.-H. Lee, T. Wang, and G. Mu
 ”Elastoresistance measurements on $\text{CaKFe}_4\text{As}_4$ and $\text{KCa}_2\text{Fe}_4\text{As}_4\text{F}_2$ with the Fe site of C_{2v} symmetry”
 Phys. Rev. B **102** (2020) 054511-1 - 054511-7.
- (61) A. Greco, H. Yamase, and M. Bejas
 ”Close inspection of plasmon excitations in cuprate superconductors”
 Phys. Rev. B **102** (2020) 024509-1 - 024509-6.

- ¶(60) H. Yamase and T. Agatsuma
 ”Suppression of superconductivity by spin fluctuations in iron-based superconductors”
 Phys. Rev. B **102** (2020) 060504(R)-1 - 060504(R)-4.
- ¶(59) W. Metzner and H. Yamase
 ”Phase stiffness in an antiferromagnetic superconductor”
 Phys. Rev. B **100** (2019) 014504-1 - 014504-12.
- (58) H. Yamase, M. Bejas, and A. Greco
 ”Doping dependence of d -wave bond-charge excitations in electron-doped cuprates”
 Phys. Rev. B **99** (2019) 014513-1 - 014513-7.
- ¶(57) A. Greco, H. Yamase, and M. Bejas
 ”Origin of the high-energy charge excitations observed by resonant inelastic x-ray scattering in cuprate superconductors”
 Commun. Phys. **2** (2019) 3.
- (56) M. Bejas, H. Yamase, and A. Greco
 ”Dual structure in the charge excitation spectrum of electron-doped cuprates”
 Phys. Rev. B **96** (2017) 214513-1 - 214513-12.
- ¶(55) K. Kuboki and H. Yamase
 ”Static spin susceptibility in magnetically ordered states”
 Phys. Rev. B **96** (2017) 064411-1 - 064411-8.
- (54) A. Greco, H. Yamase, and M. Bejas
 ”Charge-Density-Excitation Spectrum in the t - t' - J - V Model”
 J. Phys. Soc. Jpn. **86** (2017) 034706-1 - 034706-5.
- (53) T. Agatsuma and H. Yamase
 ”Structure of the pairing gap from orbital nematic fluctuations”
 Phys. Rev. B **94** (2016) 214505-1 - 214505-9.
- (52) A. Eberlein, W. Metzner, S. Sachdev, and H. Yamase
 ”Fermi surface reconstruction and drop in the Hall number due to spiral antiferromagnetism in high- T_c cuprates”
 Phys. Rev. Lett. **117** (2016) 187001-1 - 187001-6.
- ¶(51) A. Greco, H. Yamase, and M. Bejas
 ”Plasmon excitations in layered high- T_c cuprates”
 Phys. Rev. B **94** (2016) 075139-1 - 075139-8.
- ¶(50) H. Yamase, A. Eberlein, and W. Metzner
 ”Coexistence of incommensurate magnetism and superconductivity in the two-dimensional Hubbard model”
 Phys. Rev. Lett. **116** (2016) 096402-1 - 096402-6.

- (49) H. Yamase, M. Bejas, and A. Greco
 ”*d*-wave bond-order charge excitations in electron-doped cuprates”
 Europhys. Lett. **111** (2015) 57005-p1 - 57005-p6.
- ¶(48) H. Yamase and R. Zeyher
 ”Spin nematic fluctuations near a spin-density-wave phase”
 New J. Phys. **17** (2015) 073030-1 - 073030-12.
- (47) H. Yamase
 ”Griffiths wings associated with electronic nematic transition”
 J. Phys.: Conference Series **592** (2015) 012102-1 - 012102-7.
- ¶(46) H. Yamase
 ”Electronic nematic phase transition in the presence of anisotropy”
 Phys. Rev. B **91** (2015) 195121-1 - 195121-9.
- (45) M. Bejas, A. Greco, and H. Yamase
 ”Strong particle-hole asymmetry of charge instabilities in doped Mott insulators”
 New J. Phys. **16** (2014) 123002-1 - 123002-15.
- ¶(44) H. Yamase and R. Zeyher
 ”Superconductivity from orbital nematic fluctuations”
 Phys. Rev. B **88** (2013) 180502(R)-1 - 180502(R)-5.
- ¶(43) H. Yamase and R. Zeyher
 ”Electronic Raman scattering from orbital nematic fluctuations”
 Phys. Rev. B **88** (2013) 125120-1 - 125120-11.
- (42) H. Yamase
 ”Mean-field theory on a coupled system of ferromagnetism and electronic nematic order”
 Phys. Rev. B **87** (2013) 195117-1 - 195117-9.
- ¶(41) M. Bejas, A. Greco, and H. Yamase
 ”Possible charge instabilities in two-dimensional doped Mott insulators”
 Phys. Rev. B **86** (2012) 224509-1 - 224509-12.
- ¶(40) H. Yamase and W. Metzner
 ”Fermi-surface truncation from thermal nematic fluctuations”
 Phys. Rev. Lett. **108** (2012) 186405-1 - 186405-5.
- (39) A. A. Katanin, H. Yamase, and V. Yu. Irkhin
 ”Ferromagnetic instability and finite-temperature properties of two-dimensional electron systems with van Hove singularities”
 J. Phys. Soc. Jpn. **80** (2011) 063702-1 - 063702-4.

- (38) H. Yamase, M. Yoneya, and K. Kuboki
 "Multilayer cuprate superconductors as possible systems described by resonating-valence-bond and antiferromagnetic orders"
 Phys. Rev. B **84** (2011) 014508-1 - 014508-5.
- (37) H. Yamase, P. Jakubczyk, and W. Metzner
 "Nematic quantum criticality without order"
 Phys. Rev. B **83** (2011) 125121-1 - 125121-4.
- ¶(36) H. Yamase and R. Zeyher
 "Raman scattering near a d -wave Pomeranchuk instability"
 Phys. Rev. B **83** (2011) 115116-1 - 115116-11.
- (35) H. Yamase and A. A. Katanin
 "Addenda: van Hove singularity and spontaneous Fermi surface symmetry breaking in $\text{Sr}_3\text{Ru}_2\text{O}_7$ "
 J. Phys. Soc. Jpn. **79** (2010) 127001.
- ¶(34) H. Yamase and P. Jakubczyk
 "Singular nonordering susceptibility at a Pomeranchuk instability"
 Phys. Rev. B **82** (2010) 155119-1 - 155119-5.
- (33) H. Yamase
 "Pomeranchuk instability as order competing with superconductivity"
 Physica C **470** (2010) S109 - S110.
- (32) K. Kuboki, M. Yoneya, and H. Yamase
 "Coexistence of antiferromagnetism and d -wave superconductivity in extended t - J model"
 Physica C **470** (2010) S163 - S164.
- ¶(31) P. Jakubczyk, W. Metzner, and H. Yamase
 "Turning a first order quantum phase transition continuous by fluctuations: general flow equations and application to d -wave Pomeranchuk instability"
 Phys. Rev. Lett. **103** (2009) 220602-1 - 220602-4.
- (30) H. Yamase
 "Spontaneous Fermi surface symmetry breaking in bilayer systems"
 Phys. Rev. B **80** (2009) 115102-1 - 115102-7.

- (29) W. Metzner, L. Dell'Anna, and H. Yamase
"Nematic order and non-Fermi liquid behavior from a Pomeranchuk instability in a two-dimensional electron system"
J. Phys.: Conference Series **150** (2009) 032058.
- (28) P. A. Igoshev, A. A. Katanin, H. Yamase, and V. Yu. Irkhin
"Spin fluctuations and ferromagnetic order in two-dimensional itinerant systems with Van Hove singularities"
J. Magn. Magn. Mater. **321** (2009) 899-902.
- ¶(27) H. Yamase
"Self-masking of spontaneous symmetry breaking in layer materials"
Phys. Rev. Lett. **102** (2009) 116404-1 - 116404-4.
- ¶(26) H. Yamase
"Theory of reduced singlet pairing without the underlying state of charge stripes in the high-temperature superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{6.45}$ "
Phys. Rev. B **79** (2009) 052501-1 - 052501-4.
- (25) H. Yamase
"Cuprate superconductors in the vicinity of a Pomeranchuk instability"
J. Phys. Chem. Solids **69** (2008) 3297 - 3300.
- (24) H. Yamase and A. A. Katanin
"Theory of spontaneous Fermi surface symmetry breaking in $\text{Sr}_3\text{Ru}_2\text{O}_7$ "
Physica B **403** (2008) 1262 - 1264.
- ¶(23) H. Yamase
"Effect of magnetic field on spontaneous Fermi surface symmetry breaking"
Phys. Rev. B **76** (2007) 155117-1 - 155117-11.
- ¶(22) H. Yamase and A. A. Katanin
"Van Hove singularity and spontaneous Fermi surface symmetry breaking in $\text{Sr}_3\text{Ru}_2\text{O}_7$ "
J. Phys. Soc. Jpn. **76** (2007) 073706-1 - 073706-5.
- (21) H. Yamase and W. Metzner
"Competition of Fermi surface symmetry breaking and superconductivity"
Phys. Rev. B **75** (2007) 155117-1 - 155117-6.
- (20) H. Yamase
"Magnetic excitations in La-based cuprate superconductors: Slave-boson mean-field analysis of the two-dimensional t - J model"
Phys. Rev. B **75** (2007) 014514-1 - 014514-9.

- (19) H. Yamase and W. Metzner
 "Theory of the in-plane anisotropy of magnetic excitations in $\text{YBa}_2\text{Cu}_3\text{O}_{6+y}$ "
 Physica C **460-462** (2007) 979-980.
- ¶(18) H. Yamase and W. Metzner
 "Magnetic excitations and their anisotropy in $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$: Slave-boson mean-field analysis of the bilayer t - J model"
 Phys. Rev. B **73** (2006) 214517-1 - 214517-20.
- (17) A. Miyanaga and H. Yamase
 "Orientational symmetry-breaking correlations in square lattice t - J model"
 Phys. Rev. B **73** (2006) 174513-1 - 174513-5.
- (16) H. Yamase, V. Oganesyan, and W. Metzner
 "Spontaneous Fermi surface symmetry breaking on a square lattice"
 Physica B **378-380** (2006) 139-141.
- ¶(15) H. Yamase, V. Oganesyan, and W. Metzner
 "Mean-field theory for symmetry-breaking Fermi surface deformations on a square lattice"
 Phys. Rev. B **72** (2005) 035114-1 - 035114-11.
- ¶(14) H. Yamase
 "Excitation spectrum of d -wave Fermi surface deformation"
 Phys. Rev. Lett. **93** (2004) 266404-1 - 266404-4.
- (13) H. Yamase and H. Kohno
 "Coexistence of antiferromagnetism and d -wave singlet state controlled by long-range hopping integral"
 Phys. Rev. B **69** (2004) 104526-1 - 104526-5.
- (12) H. Yamase and H. Kohno
 "Competition and coexistence between Néel order and d -wave singlet RVB"
 Physica C **408-410** (2004) 273-274.
- (11) H. Yamase and H. Kohno
 "Shift of incommensurate antiferromagnetic peaks in $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ "
 Phys. Rev. B **68** (2003) 014502-1 - 014502-7.
- (10) H. Yamase and H. Kohno
 "Effects of orthorhombic distortion on magnetic excitation in t - J model"
 J. Low Temp. Phys. **131** (2003) 251-255.
- (9) H. Yamase and H. Kohno
 "Breakdown of Fourfold Symmetry of Fermi Surface and Magnetic Excitation Spectrum"
 J. Phys. Chem. Solids **63** (2002) 1393-1397.

- (8) H. Yamase
"Breakdown of Fourfold Symmetry in Diagonal Incommensurate Magnetic Peaks"
J. Phys. Soc. Jpn. **71** (2002) 1154-1160.
- ¶(7) H. Yamase and H. Kohno
"Magnetic Excitation of t - J Model with Quasi-One-Dimensional Fermi Surface — Possible Relevance to LSCO Systems"
J. Phys. Soc. Jpn. **70** (2001) 2733-2745.
- (6) H. Yamase and H. Kohno
"Quasi-One-Dimensional Band in the t - J Model"
Physica C **341-348** (2000) 321-322.
- ¶(5) H. Yamase and H. Kohno
"Instability toward Formation of Quasi-One-Dimensional Fermi Surface in Two-Dimensional t - J Model"
J. Phys. Soc. Jpn. **69** (2000) 2151-2157.
- (4) H. Yamase, H. Kohno, and H. Fukuyama
"Possible quasi-one-dimensional fermi surface in LSCO: phenomenological study"
Physica B **284-288** (2000) 1375-1376.
- ¶(3) H. Yamase and H. Kohno
"Possible Quasi-One-Dimensional Fermi Surface in $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ "
J. Phys. Soc. Jpn. **69** (2000) 332-335.
- (2) H. Yamase, H. Kohno, H. Fukuyama, and M. Ogata
"Incommensurate Antiferromagnetism Induced by Charge Density Modulation: Ginzburg-Landau Study"
J. Phys. Chem. Solids **60** (1999) 1063-1065.
- (1) H. Yamase, H. Kohno, H. Fukuyama, and M. Ogata
"Effects of Charge Density Modulation on Incommensurate Antiferromagnetism: Ginzburg-Landau Study"
J. Phys. Soc. Jpn. **68** (1999) 1082-1085.

Review in Japanese

¶(J6) H. Yamase and Y. Sakurai

”X-ray Compton scattering study of electronic states”
BUTSURI **78** (2023) 4-12.

(J5) H. Yamase and Y. Sakurai

”X-ray Compton scattering reveals Fermi surfaces of electronic nematic liquid crystal in cuprate superconductors”
Synchrotron Radiation **35** (2022) 338-347.

(J4) H. Yamase and Y. Sakurai

”Compton scattering for high-temperature superconductors: electron motions with a preferred direction”
Isotope News **779** (2022) 38-41.

¶(J3) H. Yamase and K. Kuboki

”Spin susceptibility in magnetically ordered states”
Kotai-Butsuri **53** (2018) 359-372.

(J2) H. Yamase

”Iron-based superconductors, Seven years later (Japanese translation)”
Parity **31**, No. 06 (2016) 4-13.

¶(J1) H. Yamase

”Symmetry breaking of Fermi surface”
Kotai-Butsuri **42** (2007) 621-633.