

Zuxin YE

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Department of Physics and Astronomy
Stony Brook University
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Objective

A post-doctorate position in physics or materials science.

Research Interests

Electronic, magnetic, thermal and structural properties of solids; Flux pinning and flux dynamics in superconductors; Strongly correlated electron systems; Density Functional Theory calculation.

Education

Ph.D. in Physics: (expected) State University of New York at Stony Brook, 1/2005.
Advisor: Dr. Qiang Li (Brookhaven National Laboratory), and Prof. Peter W. Stephens (State University of New York at Stony Brook).
M.A. in Physics: State University of New York at Stony Brook, 5/2001.
B.Sc. in Physics: University of Science and Technology of China, 7/1999. Advisor: Prof. Bangjiao Ye and Prof. Huimin Weng.

Research Experience

2001-present Research assistant, Superconducting Materials Group (group leader: Dr. Masaki Suenaga), Materials Science Department, Brookhaven National Laboratory

- Magneto-Optical Imaging of flux matter in superconductors
- Flux pinning and flux dynamics in superconductors
- Electro and thermal transport properties measurement
- Sample preparation
- Programming of instrument control
- Density Functional Theory calculation

2000(summer) Research assistant, Nuclear Structure Laboratory, Department of Physics and Astronomy, SUNY at Stony Brook

- γ ray spectroscopy in nuclear structure study
- Programming for data analysis using FORTRAN and C

1997-1999 Research assistant, Nuclear Solid State Physics Group, Department of Modern Physics, University of Science and Technology of China, China

- Positron Annihilation Spectroscopy in Solid State Physics
- Neutron irradiation defects in metals

Teaching Experience

1999-2001 Teaching Assistant, SUNY at Stony Brook. Undergraduate physics lab teaching, grading and tutoring.

Membership

American Physical Society
Materials Research Society

Theoretical Skills

- Full Potential Density Functional Theory
- Many-body Perturbation Theory (Green's Function Method)

Technical Skills

- Magneto-Optical Imaging technique;
- Photo-lithography; Laser patterning; mask design using AutoCAD;
- Transport property measurement;
- Operation of UHV systems;
- Structure Characterization using nuclear technique;
- Nuclear irradiation protection;
- Electronics: Analytical Circuit; Digital Circuit; Digital Signal Processing; NIM; Computer interfacing using GPIB, CAMAC.

Computer Skills

- Programming languages: C, C++, Fortran, Java, Assembly, Labview.
- Computational software: Mat-lab, Mathematica, IDL.
- Operating system: Windows, UNIX.

Honors and Awards

- University of Science and Technology of China Outstanding Thesis Award, 1999.
- Excellent Student Scholarship, 1998.

Publications

- **Zuxin Ye**, Qiang Li, Y. F. Hu, A. V. Pogrebnyakov, Y. Cui, X. X. Xi, J. M. Redwing, and Qi Li, "Unraveling the mechanism of the dendritic magnetic instability in superconducting MgB₂ films", submitted to *Appl. Phys. Lett.*
- **Zuxin Ye**, Qiang Li, G. D. Gu, J. J. Tu, W. N. Kang, Eun-Mi Choi, Hyeong-Jin Kim, and Sung-Ik Lee, "Magneto-Optical Studies of the Critical States in *c*-axis Oriented MgB₂ Thin Film and Bulk MgB₂/Mg Nano-Composites", *IEEE Trans. Appl. Supercond.* **13**, 3722 (2003).

- **Zuxin Ye**, Qiang Li, M. Suenaga, and V. F. Solovyov, “Magneto Optical Studies of YBCO Thick Films in The Critical State”, *NATO Science Series II: Mathematics, Physics and Chemistry*, Volume **142**, “Magneto-Optical Imaging”, Eds. T.H.Johansen and D. V. Shantsev, Kluwer Academic Publishers, Dordrecht, Hardbound, ISBN 1-4020-1997-1, p175-182, May 2004.
- **Zuxin Ye**, Qiang Li, Y. Zhu, W. D. Si and P. D. Johnson, “Direct Observation of Transition from Flux Pinning to Channeling Behavior in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Films Induced by the Substrate Defects”, to be submitted to *Appl. Phys. Lett.*
- **Zuxin Ye**, Qiang Li, V. F. Solovyov, M. Suenaga, and W. D. Si, “Fractal Penetration of Magnetic Flux in Type II Superconductors”, (in preparation).
- **Zuxin Ye**, Qiang Li, Genda Gu, and V. F. Solovyov, “a-b Anisotropy of Flux Penetration in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ ”, (in preparation).
- Qiang Li, M. Suenaga, **Z. Ye**, S. R. Foltyn, and H. Wang, “Reversal of Thickness Dependence of Critical Current Density $J_c(T,H)$ in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thick Films”, *Appl. Phys. Lett.* **84**, 3528 (2004).
- M. Suenaga, Q. Li, **Z. Ye**, M. Iwakuma, K. Toyota, F. Funaki, S. R. Foltyn, H. Wang, and John. R. Clem, “Thickness Dependence of AC Losses in Circular Disks of $\text{YBa}_2\text{Cu}_3\text{O}_7$ Films in Perpendicular Magnetic Fields”, *J. Appl. Phys.* **95**, 208 (2004).
- M. Suenaga, V. F. Solovyov, Q. Li, **Z. Ye**, H. J. Wiesmann, M. Iwakuma, M. Fukui, K. Toyota, F. Funaki, T. H. Johansen, D. V. Shantsev and J. R. Clem, “AC Loss in Circular Disks of Thin $\text{YBa}_2\text{Cu}_3\text{O}_7$ Films in Perpendicular Magnetic Fields”, *J. Appl. Phys.* **94**, 502 (2003).
- Qiang Li, L. Wu, Y. Zhu, A. R. Moodenbaugh, G. D. Gu, M. Suenaga, **Z. X. Ye**, and D. A. Fisher, “Comparative Studies of MgB_2/Mg Nano-Composites and Press-Sintered MgB_2 Pellets”, *IEEE Trans. Appl. Supercond.* **13**, 3051 (2003).

Conference Presentations

- “Magneto-Optical Studies of the Critical States in c-axis Oriented MgB_2 Thin Film and Bulk MgB_2/Mg Nano-composites”, Applied Superconductivity Conference, 2002; Houston.
- “Magneto-Optical Studies of Critical States in YBCO Thick Films”, 2003 American Physical Society March Meeting, Austin.

- “Magneto-Optical Studies of Thickness Dependence of Flux Pinning in YBCO Films Grown on Twinned LaAlO₃ Substrates”, 2003 Materials Research Society Fall Meeting, Boston.
- “Fractal Flux Penetration in Type II Superconductors with Different Disorder Size”, 2004 American Physical Society March Meeting, Montreal, Canada.

References

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New York 11973-5000

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