

Jie Yong

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Ph.D. in quantum physics seeking for a data related role in big data field that will utilize my analytical, machine learning and programming skills.

- Passionate about big data/machine learning/Hadoop and other new technologies
- Strong quantitative analysis, fast learning and problem solving skills

Education

The Ohio State University, Columbus, Ohio

09/2006-06/2012

Ph.D. in physics

GPA: 3.8/4.0

Fudan University, Shanghai, China

09/2002-06/2006

B.S. in physics

GPA: 3.4/4.0

Skills and Courses

- **Programming Languages:** Python, R, SQL, Java, C++, Matlab, spark(some knowledge)
- **Relevant Courses:** Johns Hopkins University data science specialization (Coursera), Machine Learning by Andrew Ng and by University of Washington (Coursera), Big data specialization by UCSD (Coursera), Algorithms and data structures, System design

Work Experience

Center of Nanophysics and Advanced Materials, University of Maryland, College Park

Assistant Research Scientist

07/2015 - 01/2016

Research Associate

01/2013 - 07/2015

- Clustering: scientific data compression
 - Applied various distance metric (cosine, Euclidean, Gaussian kernel, Pearson) and clustering (spectral, k-means, k-medoids, hierarchical) methods to X-ray diffraction and other scientific data patterns
 - Found the cosine distance metric and spectral clustering achieve the best performance
- Feature engineering, classification and model selection on quantum materials
 - Extracted, transformed and loaded features for both superconductors and non-superconductors for > 10,000 entries
 - Cleaned, documented and validated data to ensure data integrity
 - Applied generalized linear models, support vector machine, Naïve Bayes, linear discriminant analysis, random forests and k-nearest neighbors to classify these materials
 - Built a predictive model after performing stepwise feature selection and analysis of variance
 - For more details about these projects: <https://github.com/jieyong0731>
- Searched for and fabricate new quantum materials such as samarium hexboride thin films
- Communicated results with peers, presented them in national conferences and published them on top physics journal *Applied Physics Letters*

The Ohio State University, Columbus, OH

Graduate Research Assistant

09/2008-12/2012

- Measured penetration depth (a key physical parameter of superconductors) in many materials, which provided important validations for models built on novel superconductors
- Initiated and built research collaborations with six research labs (Brown, Wisconsin, Technion/Israel, KIT/Germany, SKKU/Korea, Stanford)
- Presented results in many conferences and published three first-author articles on Physical Review B, one research result won the best poster award in international conference of low temperature physics

Selected Publications

<https://scholar.google.com/citations?user=a6mEfTgAAAAJ&hl=en>

- 1) **Jie Yong**, Yeping Jiang, Xiaohang Zhang, Jongmoon Shin, Ichiro Takeuchi and Richard L. Greene, “*Magnetotransport in Nanocrystalline SmB_6 Thin Films*”, AIP Advances **5**, 077144 (2015).
- 2) **Jie Yong**, Yeping Jiang, Demet Usanmaz, Stefano Curtarolo, Xiaohang Zhang, Linze Li, Xiaoqing Pan, Jongmoon Shin, Ichiro Tachuchi, Richard L. Greene, “*Robust Topological Surface State in Kondo insulator SmB_6 Thin Films*”, Appl. Phys. Lett. **105**, 222403 (2014).
- 3) **Jie Yong**, L. Benfatto, K. Il'in, M. Siegel and T. R. Lemberger “*Robustness of the Berezinskii-Kosterlitz-Thouless transition in ultrathin NbN films near the superconductor-insulator transition*”, Phys. Rev. B **87**, 184505 (2013).
- 4) **Jie Yong**, A. McCray, M. Randeria, M. Naamneh, A. Kanigel and T.R. Lemberger “*Superfluid density in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ from optimal doping to severe underdoping*”, J. Phys.: Conf. Ser. **400**, 022141 (2012).
- 5) **Jie Yong**, M. Hinton, A. McCray, M. Randeria, M. Naamneh, A. Kanigel and T.R. Lemberger “*Evidence of two-dimensional quantum critical behavior in the superfluid density of extremely underdoped $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$* ”, Phys. Rev. B **85**, 180507(R) (2012), selected as editor's suggestions.
- 6) **Jie Yong**, S. Lee, J. Jiang, C. W. Bark, J. D. Weiss, E. E. Hellstrom, D. C. Larbalestier, C. B. Eom, and T. R. Lemberger “*Superfluid density measurements of $\text{Ba}(\text{Co}_x\text{Fe}_{1-x})_2\text{As}_2$ films near optimal doping*”, Phys. Rev. B, **83**, 104510 (2011).
- 7) D. Rall, L. Rehm, K. Il'in, M. Siegel, K. Iida, S. Haindl, F. Kurth, B. Holzapfel, L. Schultzb, **Jie Yong**, T. Lemberger, “*Penetration and de-pinning of vortices in sub- μm $\text{Ba}(\text{Fe},\text{Co})_2\text{As}_2$ thin film bridges*”, Physica C, **479**, 164 (2012).
- 8) MJ Hinton, **Jie Yong**, S Steers, TR Lemberger, “*Comparison of 2-D Quantum and Thermal Critical Fluctuations of Underdoped $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ with Ultrathin $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$* ”, Journal of Superconductivity and Novel Magnetism, **26**, 2617 (2013).
- 9) D Cunnane, C Zhuang, K Chen, XX Xi, **Jie Yong**, TR Lemberger, “*Penetration depth of MgB_2 measured using Josephson junctions and SQUIDS*”, Appl. Phys. Lett., **102**, 072603 (2013).
- 10) T. R. Lemberger, M. J. Hinton, **Jie Yong**, J. M. Lucy, A. J. Hauser, F. Y. Yang, “*Anomalously Weak Cooper Pair-breaking by Exchange Energy in Ferromagnet/Superconductor Bilayers*”, Journal of Superconductivity and Novel Magnetism, **10**, 2249 (2014).
- 11) X. F. Wang, C. Roncaioli, C. Eckberg, H. Kim, **Jie Yong**, Y. Nakajima, S. R. Saha, P. Y. Zavalij, J. Paglione, “*Tunable electronic anisotropy in single-crystal $\text{A}_2\text{Cr}_3\text{As}_3$ ($\text{A} = \text{K}, \text{Rb}$) quasi-one-dimensional superconductors*”, Phys. Rev. B, **92**, 020508(R) (2015), selected as editor's suggestions.
- 12) Jingdi Zhang, **Jie Yong**, Ichiro Takeuchi, Richard L. Greene, Richard D. Averitt, “*Ultrafast terahertz spectroscopy study of Kondo insulating thin film SmB_6 : evidence for an emergent surface state*”, arXiv:1509.04688 (2015).
- 13) Nam, **Jie Yong**, T. R. Lemberger, C. K. Shih, “*Ultra-thin Two-Dimensional Superconductivity with Strong Spin-orbit Coupling*”, accepted by Proceedings of the National Academy of Sciences (2016).
- 14) Seunghun Lee, Xiaohang Zhang, Yangang Liang, Sean Fackler, **Jie Yong**, Xiangfeng Wang, Johnpierre Paglione, Richard L. Greene, and Ichiro Takeuchi, “*Observation of the Superconducting Proximity Effect in the Surface State of SmB_6 Thin Films*”, accepted by Physical Review X (2016).