

# CV<sup>1</sup> for Jaideep Singh

## Contact Information

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## Education

- 2009 Ph.D. in Physics, University of Virginia** (expected mid-summer)  
*Alkali-Hybrid & Traditional Spin Exchange Optical Pumping Polarized Helium-3 Targets for Precision Neutron & Helium-3 Spin Structure Measurements*  
Advisor: Gordon Dell Cates, Jr.
- 2000 B.S. in Physics, California Institute of Technology**  
*Polarization & Delivery System for Xenon-129*  
Advisor: Emlyn Willard Hughes

## Research Experience

- 2001–2009 Graduate Research Assistant, Physics Department, UVa**  
Various analysis tasks including target polarimetry and radiative corrections for JLab experiment 97-110 • Engineered a new optical pumping laser/optics setup for JLab experiment 02-013 • Developed target cells using hybrid spin exchange optical pumping for JLab experiment 02-013 • Developed techniques using Faraday rotation to measure the alkali vapor density & polarization inside target cells • Produced and characterized He-3 target cells for use in JLab experiments 97-110, 01-012, 02-013, & 06-010/06-011/07-013/06-014/05-015/08-005/05-102
- 2000–2001 Research Assistant, Physics Department, UVa**  
Built a new polarized He-3 target lab at UVa • Produced and characterized He-3 target cells for use in JLab experiments 99-117 & 97-103
- 1998–2000 Undergraduate Research Assistant, Kellogg Radiation Lab, Caltech**  
Provided support and maintenance of the polarized He-3 target lab • Tested and characterized optical pumping laser/optics apparatus for JLab experiments 94-010 & 95-001 • Studied polarization of He-3 via spin exchange with optically pumped Rb & K • Studied polarization of He-3 & Xe-129 via spin exchange with optically pumped Rb

## Awards & Memberships

2008 First Prize, [Bibliographical Society of UVa Student Book Collecting Contest](#)

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<sup>1</sup>last updated May 6, 2009

2004 Student Member, American Physical Society  
2000 [Frederick W. Hinrichs, Jr. Memorial Award](#), California Institute of Technology

## Recent papers in preparation

*Hybrid K-Rb Spin Exchange Optical Pumping Polarized  $^3\text{He}$  Targets*

J. Singh, A. Tobias, P. Dolph, A. Kelleher K. Mooney, V. Nelyubin, T. Averett, G. Cates  
*in preparation for Phys. Rev. C*

*Pressure broadening of Potassium D1 and D2 lines by  $^3\text{He}$*

V. Nelyubin, A. Tobias, J. Singh, G. Cates  
*in preparation for Phys. Rev. A*

[Recent Advances in Polarized He-3 Targets](#)

J. Singh, P. Dolph, K. Mooney, V. Nelyubin, A. Tobias, A. Kelleher, T. Averett, G. Cates  
*submitted for inclusion in the Proceedings for SPIN 2008 (Charlottesville, VA)*

## Refereed Publications

*Quark-Hadron Duality in Neutron ( $^3\text{He}$ ) Spin Structure*

P. Solvignon, et al. (Jefferson Lab E01-012 Collaboration)  
[Phys. Rev. Lett. 101, 182502 \(2008\)](#)

*High Resolution Spectroscopy of  $^{12}_\Lambda\text{B}$  by Electroproduction*

M. Iodice, et al. (Jefferson Lab Hall A Collaboration)  
[Phys. Rev. Lett. 99, 052501 \(2007\)](#)

*Search for  $\Sigma_5^0$ ,  $N_5^0$ , and  $\Theta^{++}$  pentaquark states*

Y. Qiang, et al. (Jefferson Lab Hall A Collaboration)  
[Phys. Rev. C 75, 055208 \(2007\)](#)

*Precision Measurements of the Nucleon Strange Form Factors at  $Q^2 \approx 0.1 \text{ GeV}^2$*

A. Acha, et al. (HAPPEX Collaboration)  
[Phys. Rev. Lett. 98, 032301 \(2007\)](#)

*Parity-Violating Electron Scattering from  $^4\text{He}$  and the Strange Electric Form Factor of the Nucleon*

K. A. Aniol, et al. (HAPPEX Collaboration)  
[Phys. Rev. Lett. 96, 022003 \(2006\)](#)

*$Q^2$  Dependence of the Neutron Spin Structure Function  $g_2^n$  at Low  $Q^2$*

K. Kramer, et al. (Jefferson Lab Hall A Collaboration)  
[Phys. Rev. Lett. 95, 142002 \(2005\)](#)

*Precision Measurement of the Weak Mixing Angle in Møller Scattering*  
P. L. Anthony, et al. (SLAC E158 Collaboration)  
[Phys. Rev. Lett. 95, 081601 \(2005\)](#)

*Precision measurement of the neutron spin asymmetries and spin-dependent structure functions in the valence quark region*  
X. Zheng, et al. (Jefferson Lab Hall A Collaboration)  
[Phys. Rev. C 70, 065207 \(2004\)](#)

*Observation of Parity Nonconservation in Møller Scattering*  
P. L. Anthony, et al. (SLAC E158 Collaboration)  
[Phys. Rev. Lett. 92, 181602 \(2004\)](#)

*Precision Measurement of the Neutron Spin Asymmetry  $A_1^n$  and Spin-Flavor Decomposition in the Valence Quark Region*  
X. Zheng, et al. (Jefferson Lab Hall A Collaboration)  
[Phys. Rev. Lett. 92, 012004 \(2004\)](#)

## **Non-Refereed Publications**

[New Directions In Spin-Exchange Optical Pumping Polarized  \$^3\text{He}\$  Targets](#)  
J. Singh, G.D. Cates, W.A. Tobias, H.T.J. Wang &  
T.D. Averett, T.K. Holmstrom, A. Kelleher, L.M. Larkin  
in Proceedings of the Third International Symposium on the Gerasimov-Drell-Hearn Sum Rule and Its Extensions (GDH 2004, June 2–5, 2004, Old Dominion University, Norfolk, VA), edited by S. Kuhn & J.-P. Chen, World Scientific: Singapore (2005)

[Application of Sol-Gel Technology to High Pressure Polarized  \$^3\text{He}\$  Nuclear Targets](#)  
W.A. Tobias, G.D. Cates, J. Chaput, A. Deur, S. Rohrbaugh, J. Singh  
in Proceedings of the Workshop on Testing QCD Through Spin Observables In Nuclear Targets (April 18–20, 2002, University of Virginia, Charlottesville, VA), edited by D.G. Crabb, D.B. Day, J.-P. Chen, World Scientific: Singapore (2003)

## **Contributed Talks & Posters**

*Recent Advances in SEOP Polarized He-3 Targets*  
SPIN 2008, The 18th International Symposium on Spin Physics  
October 6–11, 2008, University of Virginia, Charlottesville, VA

*A Novel Optics Design for Laser Polarized He-3 Targets*  
DNP 2007, Annual Meeting of the Division of Nuclear Physics of the APS  
October 10–13, 2007, Marriott Newport News at City Center, Newport News, VA

*The GDH sum rule using nearly real photons: Measuring the spin structure of Helium-3 & Neutron at Low  $Q^2$*

2007 Annual Meeting, Graduate Student Poster Session, JLab Users Group Meeting  
June 18–20, 2007, Jefferson National Lab, Newport News, VA

*The Generalized GDH Sum Rule: Measuring the Spin Structure of He-3 and the Neutron using Nearly Real Photons*

2007 Annual Meeting, APS April Meeting  
April 14-17, 2007, Jacksonville, FL

*The Generalized GDH Sum Rule: Measuring the Spin Structure of  $^3\text{He}$  and the Neutron using Nearly Real Photons*

2006 Annual Meeting, APS April Meeting  
April 22-25, 2006, Dallas, TX

*The GDH Sum Rule, the Spin Structure of He-3 and the Neutron using Nearly Real Photons*

Physics Department Nuclear Physics Seminar  
April 26, 2005, University of Virginia, Charlottesville, VA

*New Directions In Spin-Exchange Optical Pumping Polarized  $^3\text{He}$  Targets*

GDH 2004, Third Intl. Sym. on the Gerasimov-Drell-Hearn Sum Rule & Its Extensions  
June 2–5, 2004, Old Dominion University, Norfolk, VA

## References

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