

CONTACT
INFORMATION

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RESEARCH
INTERESTS

Spectroscopy and precision measurements of QCD, exotic states, and novel beyond-the-standard-model states. Software and algorithms for distributed and large-scale “Big Data/High Throughput” computing.

RESEARCH
EXPERIENCE

Northwestern University

Evanston, IL USA

Research Associate

2012 to present

Led group effort in GlueX photoproduction experiment, at the CEBAF electron beam facility at Jefferson Lab.

GlueX Collaboration

2013 to present

- Served as Calibration Coordinator and chair of the Calibration Working Group.
- Developed and managed software for key data processing pipelines, including calibration and data quality monitoring.
- Adapted and managed the EventStore event database software, originally used at CLEO, for the GlueX data model and software framework.
- Major contributor to other parts of the reconstruction, simulation, and analysis codes. Major contributor to the RootSpy online monitoring software. Wrote and managed software to track conditions during commissioning data taking runs.
- Developed analyses for J/ψ photoproduction and various reactions for analysis of initial data.
- Managed computing cluster as a GlueX member site in the Open Science Grid.
- Collaboration Board member, 2015–2016.

Graduate Research Assistant

2003 to 2011

Worked in small group to make groundbreaking measurements in hadron spectroscopy, using data from the CLEO experiment at the e^+e^- collider CESR, at Cornell University.

CLEO Collaboration/Experiment

2003 to present

- Published results include:
 - Discoveries of long-sought heavy quark mesons ($h_c(1P), \eta_b(1S), \eta_b(2S)$),
 - Precision mass measurements,
 - First measurements and comprehensive studies of light hadron form factors at high Q^2 .
- Developed simulation and data management software for the Collaboration.
- Built and administered local computing cluster.
- Mentored undergraduate and graduate students.

PANDA Collaboration

2010 to present

- Developed software for prompt (online) reconstruction of charged tracks in the central straw tracker.
- Managed computing cluster as part of PANDAGrid grid computing network.
- Developed analyses of charmonium states and $\tau^+\tau^-$ events with simulated data.

Thomas Jefferson National Accelerator Facility Newport News, VA USA

Energy Research Undergraduate Research Fellow

Summer 2002

Wrote software for calibration of drift chambers in Hall A spectrometers.

EDUCATION

Northwestern University, Evanston, Illinois USA

Ph.D., Physics, Dec. 2011

- Thesis: Observation of $\eta_b(1S)$ and $\eta_b(2S)$ in Exclusive Radiative Decays of Upsilon(1S) and Upsilon(2S)
- Advisor: Prof. Kamal K. Seth

M.S., Physics, Dec. 2004

Carnegie Mellon University, Pittsburgh, PA USA

B.S., Physics, June 2003

- with Honors, additional Major in Computer Science

SELECTED
PUBLICATIONS

- “Comprehensive Study of the Radiative Decays of J/ψ and $\psi(2S)$ to Pseudoscalar Meson Pairs, and Search for Glueballs”, **S. Dobbs**, A. Tomaradze, T. Xiao, Kamal K. Seth, Phys. Rev. D **91**, 052006 (2015).
- “Precision Measurement of the Mass of the D^{*0} Meson and the Binding Energy of the X(3872) Meson as a $D^0\overline{D}^{*0}$ Molecule”, A. Tomaradze, **S. Dobbs**, T. Xiao, Kamal K. Seth, Phys. Rev. D **91**, 011102 (2015).
- “Heavy Neutrinos and the Kinematics of Tau Decays”, A. Kobach and **S. Dobbs**, Phys. Rev. D **91**, 053006 (2015).
- “First Measurements of Timelike Form Factors of the Hyperons, Λ^0 , Σ^0 , Σ^+ , Ξ^0 , Ξ^- , and Ω^- , and Evidence of Diquark Correlations”, **S. Dobbs** et al., Phys. Lett. B **739**, 90 (2014).
- “High precision measurement of the masses of the D^0 and K_S mesons”, A. Tomaradze et al., Phys. Rev. D **89**, 031501 (2014).
- “First Measurement of the Electromagnetic Form Factor of the Neutral Kaon at a Large Momentum Transfer and the Effect of SU(3) Breaking”, Kamal K. Seth, **S. Dobbs**, A. Tomaradze, T. Xiao, Phys. Lett. B **730** 332 (2014).
- “Observation of the Charged Hadron $Z_c^\pm c(3900)$ and Evidence for the Neutral $Z_c^0(3900)$ in $e^+e^- \rightarrow \pi\pi J/\psi$ at $\sqrt{s} = 4170$ MeV”, T. Xiao, **S. Dobbs**, A. Tomaradze, Kamal K. Seth, Phys. Lett. B **727**, 366 (2013).
- “Search for radiative production of the ‘exotic’ mesons X(3872, 3915, 3930, 3940) from $\psi(4160)$ ”, T. Xiao, **S. Dobbs**, A. Tomaradze, Kamal K. Seth, G. Bonvicini, Phys. Rev. D **87**, 057501 (2013).
- “Electromagnetic Structure of the Proton, Pion, and Kaon by High-Precision Form Factor Measurements at Large Timelike Momentum Transfers”, Kamal K. Seth, **S. Dobbs**, Z. Metreveli, A. Tomaradze, T. Xiao, G. Bonvicini, Phys. Rev. Lett. **110**, 022002 (2013).
- “First Measurements of Exclusive Hadronic Decays of $\Upsilon(1S)$ and $\Upsilon(2S)$ ”, **S. Dobbs**, Z. Metreveli, A. Tomaradze, T. Xiao, Kamal K. Seth, Phys. Rev. D **86**, 052003 (2012).
- “Observation of $\eta_b(2S)$ in $\Upsilon(2S) \rightarrow \gamma\eta_b(2S)$, $\eta_b(2S) \rightarrow$ hadrons, and Confirmation of $\eta_b(1S)$ ”, **S. Dobbs**, Z. Metreveli, Kamal K. Seth, A. Tomaradze, T. Xiao, Phys. Rev. Lett. **102**, 082001 (2012).

- “Study of $\psi(2S)$ Decays to $\gamma p\bar{p}$, $\pi^0 p\bar{p}$ and $\eta p\bar{p}$ and Search for $p\bar{p}$ Threshold Enhancements”, J. P. Alexander et al. (CLEO Collaboration), Phys. Rev. **D 82**, 092002 (2010).
- “Measurement of the $\eta_b(1S)$ mass and the branching fraction for $\Upsilon(3S) \rightarrow \gamma\eta_b(1S)$ ”, G. Bonvicini et al. (CLEO Collaboration), Phys. Rev. D **81**, 031104(R) (2010).
- “Precision Measurement of the Mass of the $h_c(^1P_1)$ State of Charmonium”, S. Dobbs et al. (CLEO Collaboration), Phys. Rev. Lett. **101**, 182003 (2008).
- “A Precision Determination of the D^0 Mass”, C. Cawlfeld et al. (CLEO Collaboration), Phys. Rev. Lett. **98**, 092002 (2007).
- “Observation of $h_c(^1P_1)$ State of Charmonium”, J.L. Rosner et al. (CLEO Collaboration), Phys. Rev. Lett. **95**, 102003 (2005).
- “Observation of the 1P_1 State of Charmonium”, P. Rubin et al. (CLEO Collaboration), Phys. Rev. **D 72**, 092004 (2005).

Full list of 150+ publications available on request.

INVITED & CONTRIBUTED TALKS

- “A Comprehensive Study of the Radiative Decays of J/ψ and $\psi(2S)$ to Pseudoscalar Meson Pairs, and Search for Glueballs”, XVI International Conference on Hadron Spectroscopy (Hadron 2015), Jefferson Lab, Newport News, VA, Sept. 2015.
- “First Measurements of Hyperon Timelike Form Factors at Large Q^2 and Evidence of Diquark Correlations”, XVI International Conference on Hadron Spectroscopy (Hadron 2015), Jefferson Lab, Newport News, VA, Sept. 2015.
- “Timelike Form Factors, Hyperons, and Diquark Correlations”, Invited Seminar, Argonne National Laboratory, Argonne, IL, , May 6, 2014.
- “Shining a New Light on Charm: J/ψ Photoproduction at GlueX”, Physics Dept. Brownbag Lunch Talk, Northwestern U., April 6, 2013.
- “Observation of $\eta_b(2S)$ in $\Upsilon(2S) \rightarrow \gamma\eta_b(2S)$, $\eta_b(2S) \rightarrow$ hadrons, and Confirmation of $\eta_b(1S)$ at CLEO”, Eleventh Conference on the Intersections of Particle and Nuclear Physics (CIPANP2012), St. Petersburg, FL, , May 29 – June 3, 2012; Published in AIP Conf.Proc. **1560** 407–409 (2013)..
- “PANDA poster” (poster), Workshop on Fundamental Physics at the Intensity Frontier, Rockville, MD, Nov. 20 – Dec. 2 (2011).
- “A New Measurement of $\eta_b(1S)$ From $\Upsilon(3S)$ Radiative Decay at CLEO”, XIII International Conference on Hadron Spectroscopy (Hadron09), Tallahassee, Florida, Nov. 29 – Dec. 4, 2009; Published in AIP Conf. Proc. **1257** 408-412 (2010).
- “Probing the Quark-Antiquark Potential”, Physics Dept. Brownbag Lunch Talk, Northwestern U., November 7, 2006.
- “Observation of h_c , the 1P_1 State of Charmonium”, APS April Meeting, Tampa, Florida, April 2005.

SERVICE & TEACHING

- Collaboration Board Member, GlueX Collaboration, 2015–2016.
- Co-organizer, NU Physics & Astronomy Dept. Open House Day, 2005 & 2006.
- Teaching Assistant, Physics 135 sequence (introductory calculus-based Physics), Fall 2003–Spring 2004

AWARDS & GRANTS

- Co-PI, 2016 GlueX Physics and Analysis Workshop, JSA Initiatives Fund (pending).
- Energy Research Undergraduate Research Fellowship, 2003
- Presidential Scholarship, Carnegie Mellon University, 1999-2003

PROFESSIONAL ASSOCIATIONS

- American Physical Society