

2011 Thesis Prize Winner Explores Strange Matter



Biplab Dey
Postdoctoral Fellow
University of California, Riverside

Studying the strange side of nuclear physics has reaped Biplab Dey a rich reward: Dey was recently named the winner of the 2011 JSA Thesis Prize.

The prize is awarded for the best Ph.D. student thesis on research related to Jefferson Lab science and includes \$2,200 and a commemorative plaque. Dey received the prize at the Annual Users Group Meeting and Workshop held June 4-6 at Jefferson Lab.

“We had 10 very impressive submissions, and the task of winnowing down to three finalists was not an easy one,” said Sebastian Kuhn, chairman of the Board of Directors for the Jefferson Lab Users Group, the organization that represents scientists who conduct research at Jefferson Lab. “The final selection of the winner was then made by a special panel of senior scientists who unanimously agreed on Dey.”

Dey conducted his research with data from an experiment that took place in 2005 in Hall B as part of the g11 run period.

“I actually joined the group after the data was taken, but I think it was an excellent analysis team and run group. It was a high-statistics run aimed at studying rare processes and many people contributed towards calibrating it carefully, which allowed me to focus on the physics aspects,” Dey said.

He performed analyses that focused on two rare particles – hyperons and phi mesons. Like protons and neutrons, these particles are made of quarks. But while protons and neutrons are built of up quarks and down quarks, the particles that Dey studied contain a type of quark that is rarely seen in ordinary matter.

“Hyperons are almost like a proton, but with one up or down quark replaced by a strange quark. We really want to know what difference having a strange quark makes to the proton,” Dey explained. “Then, the second reaction was a system that completely is only strange quarks. It’s the phi meson, which has a strange quark and an anti-strange quark.”

Dey said studying these exotic particles gives us insight into the nature of the strong interaction, the force that glues quarks into matter, such as protons and neutrons.

“I’m very grateful to my advisor, Curtis Meyer, and all the researchers and the people at JLab, including Hall B Leader Volker Burkert and Dave Ireland. I’m also thankful to my fellow students, Matt Bellis and Mike Williams. They really helped a lot,” Dey said. “It feels good that people like what you have done and appreciate it.”

Dey, originally from Calcutta, India, received his bachelor’s degree from the Indian Institute of Technology, Kanpur. His thesis was completed as part of his graduate work toward a Ph.D. at Carnegie Mellon University. It is titled “Differential cross section and polarization extractions for $\gamma p \rightarrow K^+ \Sigma^0$ and $\gamma p \rightarrow \phi p$ using CLAS at Jefferson Lab, towards a partial wave analysis in search of missing baryon resonances.”

Dey is currently a postdoctoral fellow at the University of California, Riverside, where he continues to explore unusual combinations of quarks in B-mesons – particles that contain bottom quarks – at SLAC National Accelerator Laboratory.

Four areas are considered in rating a submitted thesis: the quality of the written dissertation, the student’s con-

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tribution to the research, the work's impact on the field of physics and service (how the work benefits Jefferson Lab or other experiments). The Thesis Prize was established in 1999 by the Southeastern Universities Research Association and is now one of many projects supported by the Jefferson Science Associates

Initiatives Fund Program. JSA is the management and operations contractor for Jefferson Lab. The Initiatives Fund Program is funded by the JSA owners, SURA and CSC/ATG, to support efforts that further the scientific outreach and promote the science, education and technology missions of Jefferson Lab and the lab's user com-

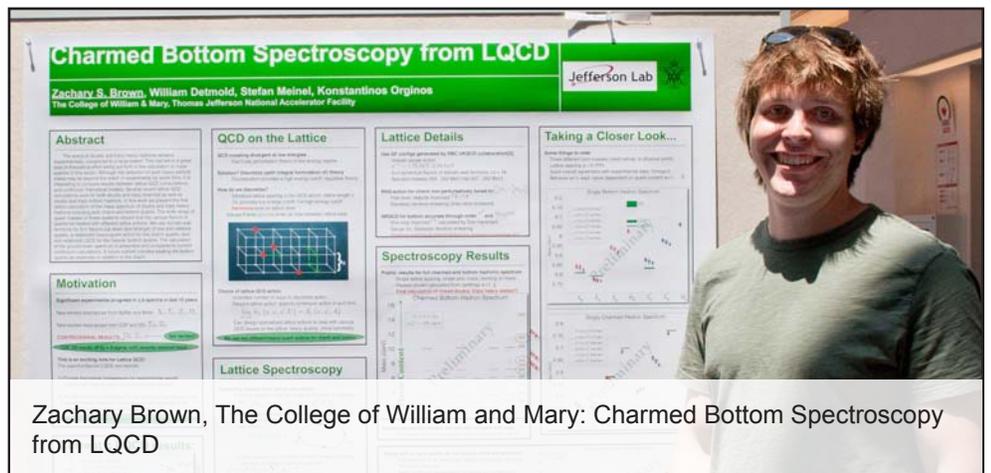
munity. For more information about the JSA Initiatives Fund program, see: <http://www.jsallc.org/IF/IFIndex.html>.

By Kandice Carter
Science writer

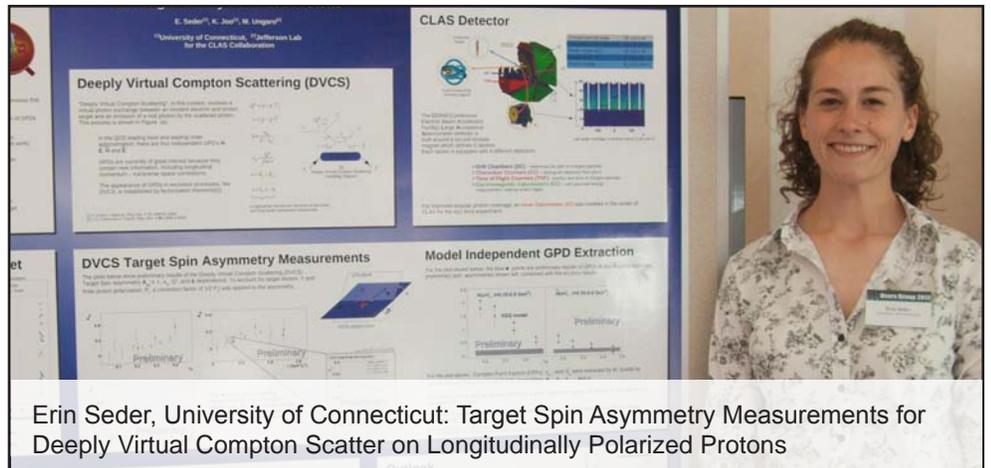
Users Group Announces Poster Contest Winners

Three young scientists were recognized at the end of the 2012 Users Group Poster Competition held in conjunction with the Jefferson Lab Annual Users Group Meeting and Workshop. It was a tie for first place: Zachary Brown, from The College of William and Mary, and Erin Seder, University of Connecticut, each received a prize of \$750. Don Jones, University of Virginia, received third place and a prize of \$250.

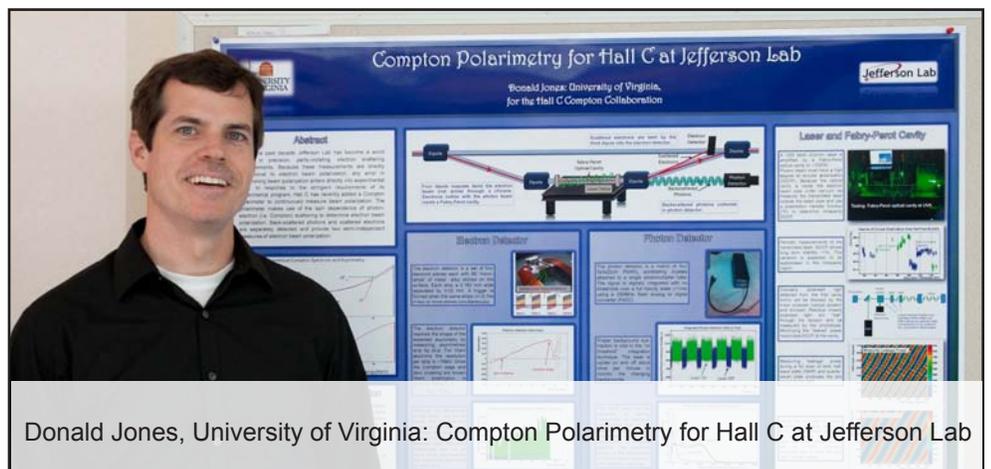
Twenty-three abstracts were submitted for the 2012 Users Group Poster Competition. The posters are judged on the quality of the poster, the presenter's command of the subject matter, and the overall impression of the poster and the presentation. Judges for this year's poster contest were Robert Michaels, JLab; Alexandre Deur, JLab; Steve Wood, JLab and Carl Carlson, The College of W&M.



Zachary Brown, The College of William and Mary: Charmed Bottom Spectroscopy from LQCD



Erin Seder, University of Connecticut: Target Spin Asymmetry Measurements for Deeply Virtual Compton Scatter on Longitudinally Polarized Protons



Donald Jones, University of Virginia: Compton Polarimetry for Hall C at Jefferson Lab