Tomasz "Tomek" M. Kott

2220 Washington Ave Apt. 201, Silver Spring, MD 20910
tkott@mailaps.org or (404) 434 5888

Summary of Qualifications

- Ph.D. candidate with 5½ years of experience working in low noise, low temperature physics and cleanroom semiconductor processing
- Proficient programmer using *LabVIEW* and *Mathematica* for automation and analysis
- Highly adaptable, inquisitive, independent researcher and enthusiastic collaborator across disciplines and skill levels
- Trusted leader, capable administrator, and strong voice on behalf of graduate students
- Proven speaker who ensures concepts are communicated clearly to diverse audiences

Education

University of Maryland, College Park, MD: *2006 – December 2012 (Expected)*. Ph.D., Physics.
Bucknell University, Lewisburg, PA: *May 2006* B.S., *summa cum laude* with Honors in Physics.

Partial Research Experience

Graduate Research Assistant, *Laboratory for Physical Sciences*, UMCP, *Fall 2006 – Present*

- Research electron-electron interactions, quantum Hall effect, as well as inter- and intra-valley scattering at milli-Kelvin temperatures using a novel device structure
- Fabricate record breaking two-dimensional electron gas on Si(111) using photo-lithography, reactive ion etching, and standard silicon processing methods along with surface characterization methods such as SEM and AFM.
- Automate data taking and preliminary analysis using a combination of *LabVIEW*, *Mathematica*, *MATLAB*, and *Origin* programming, keeping code under source control using *git*, *Subversion (SVN)*, and *fossil*
- Train new graduate students and post-docs on sample fabrication and characterization, and supervise undergraduate students
- Collaborate with group members and facility staff to improve processing, design custom tools, and troubleshoot multi-user equipment
- Effectively communicate results by presenting at conferences, including three presentations at the *APS March Meeting (2009-2011)*
  Advisor: Dr. Bruce Kane

Honors Thesis, Bucknell University, *Fall 2005 – Spring 2006*
Compared the performance of Grover's quantum search algorithm in ensemble quantum computing to search algorithms in probabilistic classical computing using *Mathematica*.

European Organization for Nuclear Research (CERN) *(Summer 2005)*
Wrote and tested simulations of jet finding algorithms for the ATLAS detector in proton-proton collisions using the *ROOT* framework in *C/C++*.

Emory University *(Summer 2004)*
Developed a model for granular drag based on concurrent experiments. Wrote and tested a program in *C* to simulate the extraction of objects from a granular bed in two dimensions. Also worked on spin-glass energy distributions.

Selected Publications

Tomasz M. Kott, et al., "Valley Degenerate 2D Electrons in the Lowest Landau," submitted for review to *Physical Review Letters*.

Binhui Hu, **Tomasz M. Kott**, et al., "High mobility two-dimensional hole system on hydrogen terminated Si-(111) devices," *Appl. Phys. Lett*. **100**, 252107 (2012).

Robert N. McFarland, **Tomasz M. Kott**, et al., "Temperature-dependent transport in a sixfold degenerate two-dimensional electron system on a H-Si(111) surface," *Phys. Rev. B*, **80**, 16, 161310R (*2009*)

Tomasz M. Kott and D. Collins, "Statistical comparison of ensemble implementations of Grover's search algorithm to classical sequential searches," *Phys. Rev. A*, **77**, 052314 (*2008*)

UNIVERSITY LEADERSHIP

UMD Student Email Committee *(November 2010 – April 2011)*
Graduate student representative on University committee that decided whether to continue in-sourcing or to out-source student email accounts. Suggested and coordinated a communications strategy to encourage student dialogue and buy-in by reaching out to the student newspaper.

Search Committee for UMD Vice President and Chief Information Officer *(December 2010 – April 2011)*
Sole graduate student representative on search committee that chose the candidates to send to the University President.

Network Refresh Advisory Committee *(Fall 2009 – Fall 2011)*
Graduate student representative to University wide committee on coordinating and planning physical wiring and infrastructure upgrades.

Physics Department Graduate Committee *(Spring 2009 – Spring 2011)*
One of two student members on the departmental committee that advises on and implements policies affecting graduate students.

Vice President for Committee Affairs, Graduate Student Government (GSG) *(Summer 2008 – Summer 2010)*
Staffed and coordinated 10 GSG permanent and ad-hoc committees while ensuring all committees were performing duties.

Web Developer, GSG *(Spring 2008 – Fall 2011)*
Implemented, extended, documented, and updated an open-source content management system for the GSG. Wrote plugins that added up to 25% of original code-base written in a combination of ColdFusion, HTML, and JavaScript interacting with an Oracle database.

MAJOR HONORS AND AWARDS

Presidential Citation, Graduate Student Government (*Spring 2011*)[1]
CNAM Seminar, best speaker (*Spring 2010*), and runner up (*Fall 2010*)[2]
Spotlight on Graduate Student Research Competition, Gold Medal (*2008*)
The **W. Norwood Lowry Prize** (*May 2006*)[3]
National Science Foundation Graduate Fellowship Honorable Mention (*2006*)

HONORS SOCIETIES

Phi Beta Kappa (ΦΒΚ) National Honors Society (May 2005)
Sigma Pi Sigma (ΣΠΣ) Physics Honors Society (May 2005)
Phi Alpha Theta (ΦΑΘ) History Honors Society (May 2006)

CITIZENSHIP

U.S. Citizen

REFERENCES

Available upon request

[1] For service to graduate students at the University over four years as a leader in the GSG
[2] Awards received during first two semesters that the prize was offered; stopped participating in seminar after the fall.
[3] Bucknell University: "The W. Norwood Lowry Prize is awarded to that member of the graduating class enrolled in physics who shows the greatest achievement and promise in physics."