

Education

- Ph.D. in Physics, University of Florida (May 2014) (GPA : 3.74/4.0)
- M.S. in Physics, University of Dhaka. (First Class)
- B.Sc. in Physics, University of Dhaka. (First Class)

Professional Employment

- Postdoctoral Research Associate (University of Florida): Current
- Research Assistantship (University of Florida): Summer 2010, 2011, Summer 2012 - Spring 2014
- Teaching Assistantship (University of Florida): 12 semesters
- Teaching Experience (United International University, Dhaka, Bangladesh): Lecturer in Physics (~ 2 years)

Research Experience

- Developed a program to calculate the band structures of strained multi quantum wells
- Developed a program to calculate the Spin Polarization in the multi-quantum well materials
- Modelling and analysis of the Absorption in the bulk and heterostructure semiconductor materials
- Modelling and analysis of the spiking activity of the ensemble of neuron cells.

Technical skills

- Programming: Python, MATLAB, C++, FORTRAN, Mathematica
- Basic experience in clusters or high performance computing
- Software Package: Origin, XPPAUT, Mathematica
- Operating System: Unix/Linux
- Machine Learning Library: scikit-learn, NLTK

Data Wrangling and Statistical Analysis Projects

- **Data wrangling:** Extraction of data, dealing of missing data for a given database (*AADHAAR database*) using Pandas, NumPy, SQL
- **Statistical analysis:** Implemented t-test, U-test, ANOVA, etc. using SciPy on a given *baseball player database*

Machine Learning Projects

- **Classification :**
 - Implemented ***Naïve Bayes classifier, Support Vector Machine (SVM) and Decision Tree*** algorithms to identify email-author
 - Spam classifier using ***SVM***.
 - Handwritten digit recognition using a ***Neural Network***.
- **Regression :**
 - Implemented ***Multiple Linear Regression*** to predict the job salaries (***1 million rows with Categorical Features***)
 - Implemented ***Multiple Linear Regression*** to predict the prices of houses.
 - Implemented ***Multiple Linear Regression*** to predict the hourly entries of passengers using *Turnstile Database*.
- **Unsupervised Machine Learning :**
 - Implemented the ***k-means clustering*** algorithm to compress an image.
 - Dimensionality reduction of the face images dataset using ***Principal Component Analysis***

Hadoop Projects

- Implemented Mappers and Reducers to obtain total sales by store, total sales by product, etc. across all of the stores using *sales dataset*.
- Implemented Mappers and Reducers to obtain total hits by page, total hits by IP address, etc. using an anonymized *Web server log file dataset*.

Journal Articles:

- Time-resolved differential transmission in MOVPE-grown ferromagnetic InMnAs" by M Bhowmick, T. R. Merritt, G. A. Khodaparast, Bruce W. Wessels, Stephen A. McGill, **D. Saha**, X. Pan, G. D. Sanders, and C. J. Stanton **Phys. Rev. B 85, 125313 (2012) (First author in the Theory group)**
- Cyclotron Resonance Studies in Ferromagnetic InMnAs and InMnSb Films" by G. A. Khodaparast, Y. H. Matsuda, **D. Saha**, T. R. Merritt, Sato, Takeyama, G.D. Sanders, C. J. Stanton, C. Feeser, B. Wessels, X. Liu, and J. Furdyna **Phys. Rev. B 88, 235204 (2013) (First author in the Theory group)**
- Assignments of Transitions in the OPNMR of GaAs/AlGaAs Quantum Wells on a Bulk GaAs Substrate" by E. L. Sesti, **D. Saha**, D. D. Wheeler, G.D. Sanders, S. E. Hayes, and C. J. Stanton. **Phys. Rev. B 90, 125301 (2014) (First author in the Theory group)**
- Effects of strain and quantum confinement in optically pumped nuclear magnetic resonance in GaAs: Interpretation guided by spin-dependent band structure calculations" by R.M.Wood, **D. Saha**, L. A. McCarthy, J. T. Tokarski, G. D. Sanders, P. L. Kuhns, S. A. McGill, A. P. Reyes, J. L. Reno, C. J. Stanton, and C. R. Bowers **Phys. Rev. B 90, 155317 (2014) (First author in the Theory group)**
- Interband Magneto-Spectroscopy in InSb Quantum Wells" by T. Kasturiarachchi, **D Saha**, X. Pan, G.D. Sanders, M. Edirisooriya, T.D. Mishima, R. E. Doezema, C.J. Stanton and M. B. Santos **JApplPhys, 117, 213914 (2015) (First author in the Theory group)**
- Relaxations of Photo-excited Carriers and Spins in InSb Based Quantum Wells" by M. Bhowmick, G. A. Khodaparast, T. D. Mishima, M. B. Santos, **D. Saha**, G. Sanders, and C. J. Stanton **(in preparation, to be submitted to APL) (First author in the Theory group)**

Proceedings (Selected)

- Optically detecting spin-split bands in semiconductors in magnetic fields" by X. Pan, Y. Sun, **D. Saha**, G. D. Sanders, M. B. Santos, R. E. Doezema, S. Hayes, G. Khodaparast, H. Munekata, Y. H. Matsuda, J. Kono, C. J. Stanton **Proc. SPIE 8461, Spintronics V, 84611P (2012)**
- Modeling Optically Pumped NMR and Spin Polarization in GaAs/AlGaAs Quantum Wells" by **D. Saha**; R. Wood; J. T. Tokarski; L. A. McCarthy; C. R. Bowers; E. L. Sesti; S. E. Hayes; P. L. Kuhns; S. A. McGill; A. R. Reyes; G. D. Sanders; C. J. Stanton **Proc. SPIE 9167, Spintronics VII, 91670N (2014)**

Courses (Selected)

- Machine Learning, Neurodynamics, Fundamentals of Computational Neuroscience, Electronics
- Statistical mechanics, Computational Physics

Honors and Awards

- "Government Merit Scholarship" by the University of Dhaka
- "IFT Summer Student Scholarship" by the University of Florida

Collaboration Experience

- Collaboration experience with Chemistry, Electrical and Computer Engineering, Experimental Physics.

Conferences attended and talks (Selected)

- Magneto-absorption in Narrow Gap InSb/AlInSb Parabolic Quantum Wells (talk at APS March Meeting, 2010)
- Theory of Carrier Dynamics in Narrow Gap Ferromagnetic Semiconductors (talk at APS March Meeting, 2012)
- Modelling Optically Pumped NMR and Spin Polarization in AlGaAs/GaAs Quantum Wells (talk at APS March Meeting, 2014)