

# **ARIF ULLAH (PhD)**

**Head, Department of Physics**  
University of Malakand  
Chakdara, Lower Dir, KPK, Pakistan.  
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## **Education**

- Ph.D (2012)**                      **Quantum-atom Optics**, The University of Auckland, New Zealand.  
Thesis Title:                      ***Delta-kicked rotor experiments with an all-optical BEC***
- M. Phil (2005)**                      Quantum Optics, Quaid-I-Azam University, Islamabad, Pakistan.
- M.Sc (2002)**                      Physics, University of Peshawar, Pakistan.
- B.Sc (1999)**                      Physics, Mathematics, Computer Science  
University of Peshawar, Pakistan.

## **Fields of Research and Interests**

- Quantum-atom Optics
- Ultra-cold Atoms
- Quantum Information
- Quantum Chaos

## **Research Experience**

**Post-PhD experience** (2012-todate): Working in the field of quantum optics and quantum information since 2012, in quantum optics and quantum information (**QOQI**) research group in the Department of Physics, University of Malakand.

**PhD** (Sep 2007-Feb 2012): Research experience in the field of quantum-atom optics in the quantum information laboratory, under the supervision of **Dr. Maarten Hoogerland** in the Department of Physics, University of Auckland, New Zealand. Supervised several BS, summer and master students in the Lab.

**Research Assistant** (Feb 2004 – June 2005):

Worked as research assistant in the group of Quantum Optics headed by **Dr. Imrana Ashraf**, Department of Physics, Quaid-I-Azam University Islamabad, Pakistan.

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## Research Supervision

### PhD Supervision:

S. No	Name	Session
1.	Muhammad Javed	2014-2017 Thesis Writing
2.	Zia ul Haq	2017-2020 (In Progress)
3.	Muhammad Idrees	2017-2020 (In Progress)
4.	Sana Ullah	2017-2020 (In Progress)

### MPhil/MS Students:

No of MPhil students supervised: **15**

No of MPhil students enrolled: **5**

**BS Students:** I have supervised several BS students in the area of quantum optics.

### Computer Skills

- Matlab
- Mathematica
- Scientific Workplace
- Latex

### Refereed journal and conference publications

- S. Ullah, F. Muhammad, I. Ullah, B. A. Bacha, **S. A. Ullah**, “Distortion-free propagation in a chiral medium using the coherent superposition of atomic states”, **Laser Physics**, 27, 11 (2017).
- H. Iqbal, M. Idrees, M. Javed, B. A. Bacha, S. Khan, and **S. A. Ullah** “Goos–Hanchen shift from cold and hot atomic media using kerr nonlinearity” **JRLR**, 38, 5, (2017)
- M. Idrees, M. Javed, B. A. Bacha, **S. A. Ullah** “*Precise position measurement of an atom using superposition of two standing waves*” **Laser Physics**, 27, 045202 (2017).
- M. Javed, S. Khan, **S. A. Ullah** “*Characterization of classical static noise using qubit as probe*” submitted to **The European Physical Journal Plus** (Jan 2017).
- Muhammad Javed, Salman Khan, **Sayed Arif Ullah** “*The dynamics of quantum correlations in mixed classical environments*” **Journal of Russian Laser Research**, 37, 6 (2016).
- S. K. Ruddell, D. H. White, **A. Ullah**, D. Baillie, and M. D. Hoogerland, “*Calorimetry of a harmonically trapped Bose gas*” **Phys. Rev. A**, 92, 063622 (2015).
- Kefayat Ullah, **Arif Ullah**, Ali Aldalbahi, Jin-do Chung, Won-Chun Oh, “*Enhanced visible light photocatalytic activity and hydrogen evolution through novel heterostructure AgI–FG–TiO<sub>2</sub> nanocomposites*”, **Journal of Molecular Catalysis A:**

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### **Chemical 410 (2015) 242–252.**

- Bakht Amin, Iftikhar Ahmed, **Arif Ullah**, and Hazrat Ali, “*Superluminal propagation in a poly-chromatically driven gain assisted four-level N-type atomic system*”, **Phys. Scr.** **88**, 045402 (2013).
- **A. Ullah**, S. K. Ruddell, J-A. Currivan and M. D. Hoogerland, “*Quantum resonant effects in the delta-kicked rotor revisited*”, **Eur. Phys. J. D**, **66**, 315 (2012).
- **A. Ullah** and M. D. Hoogerland, “*Experimental observation of Loschmidt time reversal of a quantum chaotic system*”, **Phys. Rev. E**, **83**, 046218 (2011).
- J.-A. Currivan, **A. Ullah**, and M. D. Hoogerland, “*The initial velocity dependence of the quantum resonances in the delta-kicked rotor*”, **EPL** **85**, 30005 (2009).
- **A. Ullah** and M. D. Hoogerland, “*Investigation of fractional resonant effects in an atom optics delta-kicked rotor*”, **IQEC/CLEO pacific rim conference Sydney** (28<sup>th</sup> Aug- 1<sup>st</sup> Sep 2011).

### **Conference Posters and Presentations**

- **Talk:** Celebrating Light, International Year of Light 2015 at NCP Islamabad, Feb 02-03 2015.
- **Talk:** “Quantum dynamics of ultra-cold atoms”, **National Conference on Quantum Technologies, Theory and Applications**, Aug 09-10, 2014.
- **Talk:** “Dynamics of ultra-cold atoms in a laser field”, **International Workshop in Materials Modeling and Simulations**, May 21-24, 2012.
- **Poster:** **A. Ullah**, S. K. ruddell and M. D. Hoogerland, “Calorimetry of a Bose-Einstein condensate”, **5<sup>th</sup> Annual symposium of the Dodd-Walls center for Quantum science and Technology**, Wellington, New Zealand (9<sup>th</sup>- 11<sup>th</sup> Feb 2011).
- **Talk:** “Time reversal of atomic matter waves”, **3<sup>rd</sup> Annual conference on optics, atoms and laser applications- IONS-KOALA**, University of Otago, New Zealand (29<sup>th</sup> Nov-3<sup>rd</sup> Dec 2010).
- **Poster:** **A. Ullah** and M. D. Hoogerland, “Calorimetry of a Bose-Einstein condensate and Loschmidt cooling”, **22<sup>nd</sup> International Conference on atomic physics**, Cairns Australia. (25-30<sup>th</sup> July 2010).
- **Talk:** “Experiments on calorimetry of a Bose-Einstein condensate”, **4<sup>th</sup> Annual symposium of the Dodd-Walls center for Quantum science and Technology**, 31<sup>st</sup> Jan-3<sup>rd</sup> Feb 2010, Wellington, New Zealand.
- **Poster:** **A. Ullah** and M. D. Hoogerland, “Experiments on calorimetry of a Bose-Einstein condensate”, “**International school of physics Enrico Fermi, Nano optics and atomics: Transport of light and matter waves**”, Varena Lake como, Italy. (22 Jun-3<sup>rd</sup> July 2009).
- **Poster:** **A. Ullah** and M. D. Hoogerland, “All-optical Bose-Einstein condensate and Loschmidt cooling”, **3<sup>rd</sup> Annual symposium of the Dodd-Walls center for Quantum science and Technology**, Queenstown, New Zealand. (9-11 December 2008).
- **Cold Atom Theory Workshop**, Queenstown New Zealand, December 12, 2008.
- **Poster:** **A. Ullah**, S. Whalen and M. D. Hoogerland, “Delta kicked rotor experiments and the path towards Loschmidt cooling”, **2<sup>nd</sup> Annual symposium of the Dodd-Walls center for Quantum science and Technology**, University of Otago, Dunedin, New Zealand (Feb 10-12, 2008).

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- *Workshop on Soft X-ray Beamline for SESAME, Quaid-I-Azam University Islamabad, Pakistan. (April 26-27, 2005).*

### **Teaching Experience**

- Assistant Professor: Department of Physics, University of Malakand, Pakistan June 2012 -date.
- Graduate Teaching Assistant: Department of Physics, The University of Auckland, New Zealand (2009-2012).
- Lecturer in Physics Hazara University Mansehra, Pakistan Oct, 2006-Mar, 2007.

### **Other Managerial Activities and Experience**

- Member of the evaluation committee for academic rules (By-laws) for the semester system, University of Malakand.
- Member of the Academic Council University of Malakand.
- Member of the Board of Studies, Department of Physics, University of Malakand.
- Member of Graduate Research Committee, Department of Physics, University of Malakand.
- Head Department of Physics, University of Malakand, Pakistan. (Aug 2016-present).  
**Principal Organizer “1<sup>st</sup> National Conference on Advances in Physics”  
November 06-07, 2017.**

### **Awards and Scholarships**

- Doctoral Thesis award (NZ \$ 6000), The University of Auckland, New Zealand 2012.
- Higher Education Commission (HEC) Scholarship for graduate studies (2007-2011).

### **Professional Affiliation**

- Member of the Optical Society of America OSA (2012 -date).

### **References**

- Dr. Maarten Hoogerland  
Department of Physics, The University of Auckland, New Zealand.  
Email: [m.hoogerland@auckland.ac.nz](mailto:m.hoogerland@auckland.ac.nz)
- Dr. Salman Khan Safi  
Department of Physics, CIIT, Islamabad.  
Email: [sksafi@comsats.edu.pk](mailto:sksafi@comsats.edu.pk)
- Dr. Imrana Ashraf  
Department of Physics  
Quaid-I-Azam University, Islamabad.  
Email: [drimrana@comsats.net.pk](mailto:drimrana@comsats.net.pk)

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