

# Curriculum Vitae

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**Mohammad Waseem Akhtar** (Ph.D. (Applied Physics ))

Assitant Professor (Department of Physics, Jamia Millia Islamia, Delhi, India)

Date of Joining JMI : 09/10/2019

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**Areas of Specialization : Single Quantum Emitters, Single Spin Detection, Scanning Nanoscale magnetometry, Quantum sensing, Coherent spin dynamics, Magnetic Resonance, Spin dependent transport, Nanoscale Fabrication**

## Experimental techniques and Expertise:

- Low temperature optical/electrical measurement
- Confocal imaging
- Clean room working experience
- Fabrication of nanostructure
- Electron beam lithography
- Optical lithography
- Thin film evaporation
- Scanning electron microscope
- Scanning probe microscope
- Photoluminescence and Absorption spectroscopy

## Post PhD Job Profile :

Position	Institution	Duration	Nature of Work
Postdoctoral Researcher	University of Tokyo, Japan	06/2012 to 11/2013 1yr 6months	Nanofabrication and electrical characterization of Silicon Quantum dot devices
Postdoctoral Researcher	Helmholtz Zentrum Berlin, Germany	12/2013 to 12/2015 2yrs	Defect characterization in amorphous and crystalline silicon solar-cell
Postdoctoral Researcher	CNRS France	01/2016 to 01/2019 3yrs	Nanoscale magnetometry based on single point defect in Diamond
Assistant Professor (Contractual)	Jamia Milia Islamia Physics Department	01/2019 – 09/2019 5 months	Teaching Undergraduates, Labs : B.Sc and M.Sc.

## Academic Details:

Degree	Board / University	Division
10th	ICSE Board	Not applicable
12th	ICSE Board	Not applicable
B.Sc.Physics (Hns)	Delhi University	1st Division
M.Sc. Physics	Delhi University	1st Division
M.Tech.	IIT Kanpur	Not applicable
PhD Applied Physics	Keio University Japan	Not applicable

## Honors and Awards:

➤ **Council of Scientific and Industrial Research- Junior Research Fellowship (CSIR-JRF NET)**, Govt. of India, **2006**.

<http://www.csir.res.in/>

➤ **Ministry of Human resource Development fellowship**, Govt. of India, **2006**.

<http://www.education.nic.in/>

➤ **Monbukagakusho Fellowship**, Ministry of Education, Culture, Sports, Science and Technology, Govt. of Japan, **2008**. <http://www.mext.go.jp/english/org/index.htm>

➤ Recipient of **UGC-Startup Grant**, **2020**

<https://ugcfrps.ac.in/uohyd/start-up-research-grant/>

# Complete Publication List

1. “Antiferromagnetic textures in BiFeO<sub>3</sub> controlled by strain and electric field”, A Haykal, J Fischer, **W Akhtar**, J-Y Chauleau, D Sando, A Finco, F Godel, YA Birkhölzer, C Carrétéro, N Jaouen, M Bibes, M Viret, S Fusil, V Jacques, V Garcia, **Nature Communications**, 2020 (*Impact Factor : 12.12*)
2. “Optimal architecture for diamond-based wide-field thermal imaging”, R Tanos, W Akhtar, S Monneret, F Favaro de Oliveira, G Seniutinas, M Munsch, P Maletinsky, L le Gratiet, I Sagnes, A Dréau, C Gergely, V Jacques, G Baffou, I Robert-Philip, **AIP Advances**, 2020 (*Impact Factor : 1.579*)
3. “Electric and antiferromagnetic chiral textures at multiferroic domain walls”, JY Chauleau, T Chirac, S Fusil, V Garcia, **W Akhtar**, J Tranchida, P Thibaudeau, I Gross, C Blouzon, A Finco, M Bibes, B Dkhil, DD Khalyavin, P Manuel, V Jacques, N Jaouen, M Viret, **Nature Materials**, 2019 <https://doi.org/10.1038/s41563-019-0516-z> (*Impact Factor: 46.8*)
4. “Optimizing synthetic diamond samples for quantum sensing technologies by tuning the growth temperature”, S. Chouaieb, L. J. Martínez, **W. Akhtar**, I. Robert-Philip, A. Dréau, O. Brinza, J. Achard, A. Tallaire, V. Jacques, **Diamond and Related Materials**, **96, 85, 2019** (*Impact Factor: 2.290*)
5. “Current-induced nucleation and dynamics of skyrmions in a Co-based Heusler alloy”, **W. Akhtar**, A. Hrabec, S. Chouaieb, A. Haykal, I. Gross, M. Belmeguenai, M. S. Gabor, B. Shields, P. Maletinsky, A. Thiaville, S. Rohart, V. Jacques, **Physical Review Applied**, **11, 034066, 2019** (*Impact Factor: 4.78*)
6. “Skyrmion morphology in ultrathin magnetic films”, I Gross, **W Akhtar**, A Hrabec, J Sampaio, LJ Martinez, S Chouaieb, BJ Shields, P Maletinsky, A Thiaville, S Rohart, V Jacques, **Physical Review Materials** **2, 024406, 2018** (*Impact Factor: 2.926*)
7. “Real-space imaging of non-collinear antiferromagnetic order with a single spin magnetometer”, I. Gross\*, **W. Akhtar\***, V. Garcia, L. J. Martinez<sup>1</sup>, S. Chouaieb, C. Carretero, A. Barthelemy, P. Appel, P. Maletinsky, J.-V. Kim, J. Y. Chauleau, N. Jaouen, M. Viret, M. Bibes, S. Fusil and V. Jacques, **Nature**, **549, 252, 2017** (\*contributed equally to the work) (*Impact Factor: 41.57*)
8. “Cw and pulsed electrically detected magnetic resonance spectroscopy at 263 GHz/12 T on operating a-Si:H solar cells”, **W. Akhtar**, S. Veber, A. Schnegg, C. Meier, M. Fehr and K. Lips, **Journal of Magnetic Resonance** **257, 94-101, 2015** (*Impact Factor: 2.42*)

9. “Charge-Noise-Free Lateral Quantum Dot Devices with Undoped Si/SiGe Wafer”, T. Obata, K. Takeda, J. Kamioka, T. Kodera, **W.M. Akhtar**, K. Sawano, S. Oda, *JPS Conf. Proc.* 1, 012030, 2014
10. “Characterization and suppression of low-frequency noise in Si/SiGe quantum point contacts and quantum dots”, K. Takeda, T. Obata, Y. Fukuoka, **W.M. Akhtar**, J. Kamioka, T. Kodera, S. Oda, S. Tarucha, *Applied Physics Letters* 102, 123113, 2013 (*Imapct Factor: 3.49*)
11. “Rabi oscillation and electron-spin-echo envelope modulation of the photoexcited triplet spin system in silicon”, **Waseem Akhtar**, Takeharu Sekiguchi, Tatsumasa Itahashi, Vasileia Filidou, John J. L. Morton, Leonid Vlasenko, and Kohei M. Itoh, *Phys. Rev. B* 86, 115206, 2012 (*Imapct Factor: 3.83*)
12. “Coherent Storage of Photoexcited Triplet States Using <sup>29</sup>Si Nuclear Spins in Silicon”, **Waseem Akhtar**, Vasileia Filidou, Takeharu Sekiguchi, Erika Kawakami, Tatsumasa Itahashi, Leonid Vlasenko, John J. L. Morton, and Kohei M. Itoh, *Phys. Rev. Lett.* 108, 097601, 2012 (*Imapct Factor: 8.83*)
13. “Electrical detection of cross relaxation between electron spin of phosphorus and oxygen-vacancy center in silicon” **W. Akhtar**, H. Morishita, K.Sawano, Y. Shiraki, L.S. Vlasenko and K.M.Itoh, *Phys. Rev. B*, 84, 045204, 2011 (*Imapct Factor: 3.83*)
14. “Linewidth of Low-Field Electrically Detected Magnetic Resonance of Phosphorus in Isotopically Controlled Silicon”, Hiroki Morishita, Eisuke Abe, **Waseem Akhtar**, Leonid S. Vlasenko, Akira Fujimoto, Kentarou Sawano, Yasuhiro Shiraki, Lukas Dreher, Helge Riemann, Nikolai V. Abrosimov, Peter Becker, Hans-J. Pohl, Mike L. W. Thewalt, Martin S. Brandt, and Kohei M. Itoh, *Appl. Phys. Express*, 4, 021302, 2011 (*Imapct Factor: 2.55*)
15. “Electrically detected magnetic resonance of phosphorous due to spin dependent recombination with triplet centers in gamma-irradiated silicon” ,**W. Akhtar**, H. Morishita, L.S. Vlasenko, D.S. Poloskin and K.M. Itoh, *Physica B: Condensed Matter*, 404, 4583, 2009 (*Imapct Factor: 1.45*)
16. “Synthesis and Characterization of Soluble Poly(p-phenylene) Derivatives for PLED Applications” Gunin Saikia, Ranbir Singh, Pranjol Jyoti Sarmah, **Mohammad Waseem Akhtar**, Jasmine Sinha, Monica Katiyar, Parameswar Krishnan Iyer, *Macromolecular Chemistry and Physics*, 210, 2153, 2009 (*Imapct Factor: 2.61*)

## Conference presentation:

1. Investigating the physics of skyrmions in ultrathin ferromagnets with a scanning-NV magnetometer, W. Akhtar, MMM-Intermag Conference, Washington, 14<sup>th</sup> -18<sup>th</sup> January 2019
2. Real space imaging with single spin magnetometer, W.Akhtar, Joint European Magnetic Symposium (JEMS), Mainz, Germany, 3<sup>rd</sup> – 7<sup>th</sup> September 2018
3. Real-space imaging of non-collinear antiferromagnetic order with a single spin magnetometer, W.Akhtar , Workshop on Antiferromagnetic spintronics, Grenoble France, 25-27<sup>th</sup> October, 2017
4. Imaging Magnetism at the Nanoscale with a Single Spin Microscope W. Akhtar, V. Jacques, MRS Phoenix 21 April 2017
5. CW and pulsed electrically detected magnetic resonance spectroscopy at 263 GHz / 12 T on operating a-Si:H solar cells, W. Akhtar, S. Veber, A. Schnegg, C. Meier, M. Fehr and K. Lips, New frontiers in sensitivity for EPR spectroscopy, Gottingen, Germany, January 26 to 27, 2015
6. Spin dependent transport in amorphous silicon solar cells revisited: a 263 GHz/9.4T EDMR study, W. Akhtar, S. Veber, A. Schnegg, C. Meier, M. Fehr and K. Lips, European federation of EPR, Marseilles, France, September 7 to 12, 2014 (oral presentation)
7. Electrically detected magnetic resonance at 263 GHz, W. Akhtar, The young researcher workshop, March 31 to April 2, **2014, Bonn, Germany** (oral presentation)
8. Development of lateral quantum dots on non-doped Si/SiGe , T.Obata, K. Takeda, J. Kamioka, T. Kodera, W. M. Akhtar, K. Sawano, S. Oda, Y. Shiraki, and Seigo Tarucha, Japan Physical Society, 2013
9. Electron Spin Echo Envelope Modulation of Photoexcited Triplet States in Silicon, Waseem Akhtar, Takeharu Sekiguchi, Tatsumasa Itahashi, Leonid Vlasenko, Kohei M. Itoh, 31<sup>st</sup> International Conference on the Physics of Semiconductors, July 29 to August 03, 2012, Zurich, Switzerland,
10. Triplet Electron Spin Coherence Storage with <sup>29</sup>Si Nuclear Spin in Si, Waseem Akhtar, Takeharu Sekiguchi, Erika Kawakami, Tatsumasa Itahashi, Kohei M. Itoh, Leonid Vlasenko, Vasileia Filidou, John J.L. Morton, 2012 International Workshop on Silicon Quantum Electronics, February 12 to 14, 2012, Sydney, Australia,.
11. Coherent manipulation of photoexcited triplet spins in silicon, W.Akhtar, E.Kawakami, T.Sekiguchi, T.Itahashi, L.S.Vlasenko and K.M.Itoh, SPINTECH-6, (ア)1-4 August, 2011, Matsue, Japan

12. Spin coherence study of a localized triplet state in silicon state in silicon , W. Akhtar, E. Kawakami, T. Sekiguchi, T. Itahashi, H. Morishita, L.S. Vlasenko and K.M. Itoh, PASPS-15, December 20-21, 2010, University of Tsukuba, Japan.
13. Pulse ESR Study of Photoexcited Triplet Centers in Silicon, W. Akhtar, E. Kawakami, T. Sekiguchi, T. Itahashi, H. Morishita, L.S. Vlasenko and K.M. Itoh, Nano Quine symposium, December 22nd, 2010, Institute for Nano Quantum Information Electronics, University of Tokyo,
14. Electrical Detection of Cross-Relaxation in Phosphorus doped gamma-irradiated Silicon, W. Akhtar, H. Morishita, L. S. Vlasenko, and K. M. Itoh, The 6th International Conference on the Physics and Applications of Spin Related Phenomena in Semiconductors, August 1-4, 2010, University of Tokyo, Japan.
15. Electrically Detected Magnetic Resonance of Phosphorus in gamma-Irradiated Silicon at Low Magnetic Field, W. Akhtar, H. Morishita, L. S. Vlasenko, D. S. Poloskin, K. M. Itoh, PASPS-14, December 20-21, 2009, Keio University, Japan
16. Electrically detected magnetic resonance of phosphorous due to spin dependent recombination with triplet centers in irradiated silicon, W. Akhtar, H. Morishita, L. S. Vlasenko, D. S. Poloskin, K. M. Itoh International conference on defects in Semiconductor-25, July 20-24, 2009, St. Petersburg, Russia.
17. Photoluminescence quantum efficiency of ultraviolet emitting polymeric semiconductors, Waseem Akhtar, Ranbir Singh, Asha Sharma, Monica Katiyar, Shu Seki, Asian Symp. on Information Display, 8-12 October, 2006, New Delhi, India.
18. Flexible Organic Light Emitting Diodes, B.V. Mahesh, Ranbir Singh, Abhishek Sharma, Waseem Akhtar, Monica Katiyar, Asian Symp. on Information Display, 8-12 October, 2006, New Delhi, India.
19. Device Degradation Studies of MEHPPV based polymer light emitting Diodes, Abhishek Raj, Ashutosh Bindal, Ranbir Singh, Abhishek Sharma, Waseem Akhtar, Monica Katiyar, Asian Symp. on Information Display, 8-12 October, 2006, New Delhi, India.