



# Athulya Krishnan M.B

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International School of Photonics, Cochin University  
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682022

## Objective

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Highly motivated post graduate student focused in Photonics looking for opportunities to solve challenging research problems, applying them to get clear and productive outputs.

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## Education and Qualifications

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- **9th Semester**, 5 year Integrated MSc in Photonics, International School of Photonics, CUSAT (July 2015- Present)  
**8.67/10**  
**GPA Till date**
  - **All India Secondary School Examination** Kendriya Vidyalaya Pattom (2013)  
**10/10 CGPA**
  - **All India Senior School Certificate Examination** Kendriya Vidyalaya Pattom (2015)  
**92.2 %**
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## Work experience

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Department of Physics, Indian Institute of  
Technology, Ropar, India

May 21, 2018 — July 15, 2018

Summer Internship

### **Study of Spontaneous Emission Dynamics from Defect Centres of Nanodiamonds**

Guide : Dr R.V. Nair, Assistant Professor, IIT Ropar

Color centers in diamond are prominent candidates to generate and manipulate quantum states of light, as they are photostable source of single photon at room temperature. My project aimed at detecting single photon from single Nitrogen vacancy center in nanodiamonds experimentally and to study its optical properties and emission dynamics.

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International School of Photonics, Cochin  
University of Science and Technology,  
Cochin, India

December 1, 2017 — April 1, 2018

Accademic Curriculum Project

### **Modulation of Whispering Gallery mode lasing in microring embedded dye doped hollow polymer fiber**

Guide : Prof Dr. M. Kailasnath, Professor, International School of Photonics, CUSAT

The project aimed at realizing Whispering Gallery Mode microcavity for applications like biological and chemical sensing. This work was mainly focused on characterization of RhB dye doped whispering gallery mode microring polymer fiber. The lasing behavior of RhB dye doped microring fiber at different propagation length and by varying different pump energy was characterized.

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University of Saarland, Germany

May 2, 2019 — June 30, 2019

Summer Internship 2019

## NV Magnetometry

Guide : Dr Elke Neu Ruffing, Junior Research Group Leader, Saarland University

The project aimed at the understanding of basic spin manipulation techniques and the set up in Nitrogen vacancy defect in diamonds. Study on NV Magnetometry was also done.

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University of Paris Saclay

Jan 8, 2020 — April 27, 2020

Master Internship

Development of up-conversion nanocrystals for optical sensing of electric field in neuron.

Currently working on BTO crystal with Erbium and ytterbium doped to find upconversion signal for further applicaiton.

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## Activities

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### PARTICIPATIONS

- Attended a workshop on **"Shaping the PhD supervision process - chances and obligations of international PhD students"** by GradUs Global at University of Saarland. (May 2019)
  - Participated for a short course on **"Light matter interaction"** 2018 by **Indian laser association** at Raja Rammana Centre for Advanced Technology.
  - Attended **National Photonics Symposium** 2018, 2019 at International School of Photonics, CUSAT.
  - Organised and participated actively in **IONS KOCHI 2017** (International OSA network of students) (11th-14th September 2017)
  - Attended **Summer School For Optics and Photonics (SOAP)** at Indian Institute of Science (IISc) Bangalore. (12th-16th June 2017)
  - Attended **Annual Photonics Workshop (APW)** (26th -28th February 2016) at International School of Photonics, Cochin University of Science and Technology (CUSAT).
  - Attended **National Photonics Symposium (NPS)** (27th February - 1st March 2017) themed **Nanophotonics** at International School of Photonics, CUSAT.
  - Active participation in **Optics fair** 2016 and 2017 at International School of Photonics, CUSAT,
  - Attended **lecture series on Quantum Optics** by Prof. K. Thyagarajan and Andal Narayan at ISP, CUSAT (1st -2nd October 2017)
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### SEMINARS UNDERTAKEN

- Zener diode
  - Photodynamic therapy
  - Photoacoustic effect
  - X-ray photo-electron Spectroscopy
  - Nitrogen Vacancy centers in Nanodiamonds
  - NV scanning magnetometry
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# Computational Skills

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  - Turbo C++
  - Matlab
  - Origin
  - Application-advance Microsoft office
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## Courses Undertaken

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**Physics** : Mechanics and Wave Phenomena, Electricity and Magnetism, Nuclei, particles and beams, Classical Mechanics, Statistical Mechanics, Thermodynamics, Atomic & Molecular Spectroscopy, Solid State Physics, Electromagnetic Theory & Relativistic Phenomena, Basic & Advanced Quantum Mechanics, Material Science.

**Optics and Photonics**: Geometrical Optics, Physical Optics, Optical Instrumentation, Applied Optics, Optoelectronics, Fiber Optics, Laser Physics, Laser Systems and Applications, Nanophotonics, Biophotonics, Quantum Optics, Nanotechnology, Non linear optics, Optical communication, Industrial Photonics, Holography.

**Electronics** : Basic Electronics, Digital and Analog Electronics, Microprocessors and their Applications, Electronic Instrumentation, Digital Signal Processing.

**Mathematics** : Numerical Methods and Linear programming, Statistical Methods, Vector Calculus, Matrices and Complex Numbers, Curvilinear Coordinates, Tensors, Vector Space, Differential Equations, Laplace Analysis, Fourier Analysis, Group Theory, Complex Variables, Non-linear Differential Equations.

**Lab Courses** : Basic Optics, Photonics Lab, Analog & Digital Electronics, Microprocessor.

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## Memberships

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- Optical Society of America (OSA)
  - Society of Photo-Optical Instrumentation Engineers. (SPIE)
  - Indian Laser Association (ILA)
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## References

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### **Dr. Elke Neu Ruffing**

Junior Research Group Leader

Saarland University

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### **Dr. Rajesh V. Nair**

Assistant Professor

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I affirm that all the information provided here is true to best of my knowledge.

- Athulya Krishnan M.B