Curriculum Vitae

Ramlal Unnikrishnan

Personal Data

Date of Birth:	28-07-1997
Sex:	Male
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Education

2015-20	PhD in Astrophysics *(ongoing)* Evolved Stars Group, Department of Space, Earth and Environment, Onsala Space Observatory, **Chalmers University of Technology**, Sweden.
2015-20	Integrated Master of Science (M.Sc.) in Physics *(Graduated in June 2020)* CGPA: **8.65/10** Department of Physics and Astronomy, **National Institute of Technology (NIT)**, Rourkela, India.
2013-15	Intermediate (Class XII) : Science Percentage: **95.40%** *CBSE*, **Kendriya Vidyalaya**, Kollam, India.
2013	Matriculation (Class X) CGPA: **10/10** *CBSE*, **Kendriya Vidyalaya**, Kollam, India.

Research Experience

2020-24/25	**PhD**: My research focuses on the chemical composition and properties of circumstellar envelopes and outflows of carbon-rich AGB stars. **Supervisor**: Dr. Elvire de Beck.
2019-20	**MASTER'S PROJECT**: Dept. of Physics and Astronomy, **NIT** Rourkela. **Title**: Multi-wavelength Analysis of Planetary Nebulae. [View thesis] **Supervisor**: Dr. Ananta C. Pradhan.
May - July 2019	Scientific Guest at **Max-Planck-Institut für Radioastronomie, Bonn**. **Title**: Chemistry in the BHR71 outflow: A study of CH_3OH and SO with APEX. [View project report] **Supervisors**: Prof. Dr. Karl M. Menten, Dr. Friedrich Wyrowski.
May - Dec 2018	Research intern at **Tata Institute of Fundamental Research**, Mumbai. **Title**: Study of Chemistry in Prestellar Cores: Modelling the Chemical Composition and Physical Structure of L1544. [View project report] **Supervisor**: Prof. Bhaswati Mookerjea.
May - July 2017	Research intern at **Raman Research Institute**, Bangalore. **Title**: Study of Dispersion Measure and Faraday Rotation of Pulsar Signals from PSR B0950+08. [View project report] **Supervisor**: Prof. Avinash Deshpande.

Short Term Projects

February 2019	Minor project at Astronomy Laboratory, NIT Rourkela. **Topic**: UV extinction curve and redshift of HD14818 using pair method and spectral analysis using MAST-IUE UV data.

Seminars / Talks Presented

May 2020	Master's Colloquium, Dept. of Physics and Astronomy, NIT Rourkela. **Title**: Multi-wavelength Analysis of Planetary Nebulae.
May 2019	Weekly Presentation, Sub-millimeter Astronomy Group, MPIfR Bonn. **Title**: Modelling the evolution and chemical composition of L1544.
April 2019	Poster Presentation, Dept. of Physics and Astronomy, NIT Rourkela. **Title**: Impact of Coronal Mass Ejections on Earth's ionosphere.
November 2018	Seminar and Technical Writing, NIT Rourkela. **Title**: Processing and Analysis of Pulsar spectra.
August 2018	Scientific and Industrial Research Experience seminar, NIT Rourkela. **Title**: Astrochemical analysis of low mass star forming regions.
July 2018	Visiting Students' Research Program (VSRP) seminar, TIFR Mumbai. **Title**: Developing gas-grain chemical models of L1544 pre-stellar core using UCLCHEM.

Research Interests

AGB and Evolved stars,
Outflows and circumstellar envelopes,
Observational Astrochemistry,
Astronomical data processing, modelling and numerical simulations,
Star formation and protostars,
Molecular clouds and the interstellar medium.

Programming and Computer Skills

Programming Skills:	Python, FORTRAN, C, C++, Bash (Linux shell), Machine Learning (scikit-learn), SQL, HTML.
Astrophysics software:	GILDAS - CLASS, CASSIS, Astropy, DS9, TopCat, Paris-Durham Shock Code, UCLCHEM, RADEX.
Software Known:	Matlab, GNU-Octave, Mathematica, Origin, Scilab, SolidWorks, LaTex, MS Office.
Computer Skills:	Proficient in using advanced python packages. Extensive experience in working and programming in Linux, Mac and Windows environments.

Online Courses Completed

May-June 2020 | *Data Driven Astronomy*, University of Sydney. [View certificate]

Scholarships and Achievements

2015-20	**DST-INSPIRE Scholarship**. Awarded by Department of Science & Technology (DST), Ministry of Human Resource Development (MHRD), Government of India, to top 1% of students in Class XII board examination, pursuing courses in Basic Sciences.
2018	Participated in IUCAA Workshop on Astronomy and Astrophysics.
2015	Qualified the following National Entrance Examinations: JEE(Main), NEST, CUSAT-CAT, CUCET, HSEE (IIT Madras).
2014	All India Rank 25 in English Essay Writing Competition organized by the European Union for Indian students. See Website
2014	Percentile score of 99.0412 in CBSE Problem Solving Assessment (PSA).
2012	Participated in the 40^{th} Jawaharlal Nehru National Science Exhibition.
2012	1^{st} prize in Mathematics quiz organized by Kendriya Vidyalaya Sangathan as part of National Mathematical Year celebration.
2011	Second Prize in State Level Physics Quiz of Kendriya Vidyalaya Sangathan on National Science Day.

Extra Curricular Activities

2015-2020	Member of **Astro-NITR**, the official Astronomy club of NIT Rourkela.
2015-16	AASRA Charity Club member, NIT Rourkela. Involved in teaching and popularization of science among rural schoolchildren of Odisha.
2016-17	Member of University football team, NIT Rourkela.
2016	International Students' Meet (ISM) volunteer, NIT Rourkela.
2015-16	National Service Scheme (NSS) volunteer, NIT Rourkela.

Languages Known

Malayalam:	Native
English:	Fluent
Hindi:	Fluent

Hobbies and Interests

Sky watching
Reading
Debating
Football
Travelling