

Jayadev Pradeep

Scientist/Engineer - 'SC'

Space Physics Laboratory

Vikram Sarabhai Space Centre
Indian Space Research Organisation
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Nationality : Indian

D.O.B : 18 November 1995

ACADEMIC QUALIFICATIONS

Degree	Year	Institute/University
B.Tech (Engineering Physics)	2014-2017	Indian Institute of Space Science and Technology (IIST), Trivandrum, INDIA
MS (Astronomy and Astrophysics)	2017-2019	Indian Institute of Space Science and Technology (IIST), Trivandrum, INDIA

RESEARCH POSITIONS

Positions held	Period	Institute/Organisation
Scientist/Engineer - 'SC'	August.2019 - Present	Space Physics Laboratory, Vikram Sarabhai Space Centre, ISRO
Summer Research Fellow	December.2018 - January.2019	Indian Institute of Astrophysics (IIA), Bengaluru, INDIA
Visiting Research Student	June.2018 - August.2018	Leiden Observatory, Leiden University, the Netherlands
Intern	December.2017	Aryabhata Research Institute of Observational Sciences (ARIES), Nainital, INDIA
Visiting Research Student	May.2017 - July.2017	Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, INDIA
Intern	December.2016	Advanced Centre for Atmospheric Radar Research (ACARR), Cochin University of Science and Technology, INDIA

ADDITIONAL QUALIFICATIONS

Degree	Year	Institute/Organisation
Trinity Guildhall Grade 5 Certificate (Electronic Keyboards)	2013	Trinity College of Music, London Study Centre: Joy's Academy of Performing Arts, Kochi, INDIA

RESEARCH EXPERIENCE

- ❑ Designed and developed Python-based software called *CAPA - Close Approach Prefiltering Analyzer*, for performing pre-filtering of space objects using mathematical computations prior to orbit propagation for proximity analysis, under the guidance of Shri. Deepak Negi, VSSC, as part of ISRO Induction Training Programme (2019-2020).
 - ❑ Carried out on-site data collection and data analysis to estimation Methane emission from dairy farms in Thiruvananthapuram district using an empirical bottom-up approach, under the guidance of Dr. C. S. Shajjumon, IIST (2019).
 - ❑ Performed quasar absorption spectroscopy and ionization modelling of solar metallicity gas in the extended halo of a galaxy at redshift 0.12, using data from the Cosmic Origins Spectrograph (COS) on board the Hubble Space Telescope (HST), under the supervision of Dr. Anand Narayanan, IIST (2019).
 - ❑ Co-investigator in a large (116 orbits) Hubble Space Telescope proposal titled, “*Understanding the Astrophysics of the Outskirts of Galaxy Clusters by Studying the Cool/Warm-hot Gas*”, submitted for the HST Cycle 27 Observations, with Dr. Sowgat Muzahid, Leiden University, as PI (2019).
 - ❑ Pursued Masters project on HST/COS quasar absorption line spectroscopy and photoionization modelling of metal-rich, cool-warm gas clouds in the outskirts of galaxy clusters, under the guidance of Dr. Anand Narayanan, IIST (2018-19).
 - ❑ Performed X-Ray variability analysis of Narrow Line Seyfert 1 (NLSy1) galaxies using data from XMM-Newton, by reducing X-Ray data and obtaining light curves using the Science Analysis Software (SAS), under the guidance of Dr. C. S. Stalin, at IIA, Bengaluru (2018-19).
 - ❑ Took part in the Leiden/ESA Astrophysics Program for Summer Students (LEAPS) 2018 at the Leiden Observatory, the Netherlands. Developed a Python-based software called *STACKR* to perform ultra-deep spectroscopic stacking using the MUSE IFU spectrograph on the Very Large Telescope (VLT), under the guidance of Dr. Michael Maseda. The software was used to study the class of high-redshift galaxies known as Lyman Alpha Emitters (LAE) (2018).
 - ❑ Undertook a project to estimate the rotational velocity of an F-type ultra-fast rotating star from the rotational Doppler broadening of absorption lines in stellar spectra obtained using the Himalayan Chandra Telescope (HCT, Ladakh), at ARIES, Nainital, under Dr. Jeewan Ch. Pandey (2017).
 - ❑ Participated in the Vacation Students' Programme 2017 at the Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, and completed a project on the statistical estimation of the metallicity of the low-redshift Intergalactic Medium by spectral stacking of quasar absorption spectra, under the guidance of Prof. R. Srianand (2017).
 - ❑ Pursued a project to estimate the variation of Eddy Dissipation Rate within the Tropical Planetary
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Curriculum Vitae - September, 2020

Boundary Layer Using data from a GRAW GPS radiosonde and the 205 MHz Atmospheric Radar, at the Advanced Centre for Atmospheric Radar Research (ACARR), Cochin University of Science and Technology, under the guidance of Dr. Manoj M. G (2016).

- ❑ Developed a C++-based user interface using for CLOUDY – an open source spectral synthesis code designed to simulate photo-ionizations within intergalactic clouds subject to a broad range of conditions, under the guidance of Dr. Anand Narayanan, IIST (2016).
- ❑ **Current Research:** Scientific Team member and co-investigator, SPAV payload (Solar Occultation Experiment) to be flown on board ISRO's Venus Mission. Responsible for development of data inversion algorithm to derive extinction coefficient profiles of aerosols and thin clouds in the Venusian atmosphere, in addition to simulation studies and orbital calculations for the payload.

SKILLS

Programming Languages: C/C++, MATLAB, IDL, Python

Data Analysis / Simulation Software: GNU PLOT, Cloudy, HEASoft, SAS, CIAO, CASA, IRAF, VPFIT

Other Software: STK, AutoCAD, Adobe Photoshop, Adobe Audition, Adobe Premiere Pro, DaVinci Resolve, Microsoft Office and LaTeX

TALKS AND CONFERENCES

- ❑ Presented a paper on “*Metals in Gas-Rich Circumcluster Absorbers*” at the Regional Astronomers Meeting on Astronomy Research Opportunities and Challenges - V, at the Cochin University of Science and Technology (CUSAT), Kerala, organised by IUCAA and CUSAT, in February, 2019.
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ACHIEVEMENTS

- ❑ Selected for the Leiden/ESA Astrophysics Program for Summer Students (LEAPS) 2018 at Leiden Observatory, the Netherlands, organised by Leiden University and the European Space Agency (ESA).
 - ❑ Selected for the IASc-INSA-NASI Summer Research Fellowship Programme (SRFP) 2018, to work under Dr. C. S. Stalin, Indian Institute of Astrophysics (IIA), Bengaluru.
 - ❑ Selected for the Vacation Students' Programme 2017 at the Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, to work under Professor R. Srianand, IUCAA.
 - ❑ Qualified all levels of the National Talent Search (NTS) Exam conducted by NCERT, in 2010, with the second-highest score in the state of Kerala.
 - ❑ Qualified first level of the National Science Olympiad 2008-2009, conducted by the Science Olympiad Foundation, with 1st rank in Kerala state and 44th rank in all-India level (percentile score of 99.91). Also qualified the second level for the same year, with an All India Rank of 166.
 - ❑ Secured All India Rank 42 for the T.I.M.E National Scholarship Test, 2010.
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- ❑ Secured 2nd prize in the Kerala state regional finals of the Aqua Regia science quiz, conducted by T.I.M.E. Pvt. Ltd in 2011.
 - ❑ Received Jagdish Chandra Bose award for best working model at the 20th Swadeshi Science Congress, 2010, for “EXEL - the power-generating exercise bicycle”.
 - ❑ First prize in Vigyanotsav science exhibition sponsored by the Ministry of Defence, Govt. of India, in Kochi, Kerala in 2009 for a semi-automatic model demonstrating Solar and Lunar Eclipses and their dependence on orbital inclination.
 - ❑ Second Prize in the state of Kerala at the 8th Children’s Maths Congress, held by the Kerala Ganitha Shastra Parishad, at Kottayam, in 2009, for a presentation on the topic ‘Mathematics in Nature’.
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RESEARCH PUBLICATIONS

Google Scholar: <https://scholar.google.com/citations?user=dSJyfyIAAAAJ&hl=en>

ORCID ID: <https://orcid.org/0000-0003-4466-3327>

Refereed Journal Publications:

- 1) Anna Feltre, Michael V. Maseda , Roland Bacon, **Jayadev Pradeep**, Floriane Leclercq, Haruka Kusakabe, Lutz Wisotzki, Takuya Hashimoto et al. (2020), *The MUSE Hubble Ultra Deep Field Survey. XV. The mean rest-UV spectra of Ly-alpha emitters at z>3*, *Astronomy & Astrophysics* (in-press), <https://doi.org/10.1051/0004-6361/202038133> (IF: 5.636)
 - 2) **Jayadev Pradeep**, Sriram Sankar, T. M. Umasree, Anand Narayanan, Vikram Khaire, Matthew Gebhardt, Sameer and Jane C. Charlton (2020), *Solar Metallicity Gas in the Extended Halo of a Galaxy at z~0.12*, *Monthly Notices of the Royal Astronomical Society*, Volume 493, Issue 1, March 2020, Pages 250–266, <https://doi.org/10.1093/mnras/staa184> (IF: 5.231)
 - 3) **Jayadev Pradeep**, Anand Narayanan, Sowgat Muzahid, Daisuke Nagai, Jane C Charlton and Raghunathan Srikanth (2019), *Detection of metal-rich, cool-warm gas in the outskirts of galaxy clusters*, *Monthly Notices of the Royal Astronomy Society*, Volume 488, Issue 4, October 2019, Pages 5327–5339, <https://doi.org/10.1093/mnras/stz2059> (IF: 5.231, CI: 2)
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