

# Abhijeet ANAND

## PERSONAL DATA

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NATIONALITY AND DATE OF BIRTH: Indian | 3rd Feb 1995.  
CURRENT ADDRESS: Max-Planck-Institut für Astrophysik, Garching, Germany.  
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## EDUCATION

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- Sept 2018- Dr. rer. nat. in PHYSICS, **Ludwig-Maximilians-Universität**, Germany.  
Thesis: “Constraining circumgalactic medium properties with large spectroscopic surveys.”  
Advisors: Prof. Dr. Guinevere KAUFFMANN, MPA, & Dr. Dylan NELSON, ITA, Heidelberg.
- Jun 2016- Master of Science in PHYSICS, **Indian Institute of Science**, India.  
Jul 2017 Thesis: “A sensitive search for HI 21 cm in superdisks of large radio galaxies.”  
Advisor: Dr. Nirupam Roy, Indian Institute of Science, Bangalore.  
TGPA: 7.0/8 (Overall CGPA in five years (2012-2017): 6.6/8).
- Aug 2012- Bachelor of Science (Research) in PHYSICS, **Indian Institute of Science**, India.  
May 2016 Thesis: “Sources of Continuum Opacity in Hydrogen deficient stars.”  
Advisor: Prof. Gajendra PANDEY, Indian Institute of Astrophysics, Bangalore.  
TGPA: 6.7/8 (Overall CGPA in four years (2012-2016): 6.5/8).

## REFEREED PUBLICATIONS

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- 2021 **A. Anand**, D. Nelson and G. Kauffmann, “Characterizing the abundance, properties, and kinematics of the cool circumgalactic medium of galaxies in absorption with SDSS DR16”, 2021, *MNRAS*, 504, 65 [[arXiv](#)] [[ADS](#)].
- 2019 **A. Anand**, N. Roy and Gopal-Krishna, “Search for H I emission from superdisk candidates associated with radio galaxies”, 2019, *RAA*, Vol. 19, No.6, 83, [[arXiv](#)] [[ADS](#)].

## CONFERENCES/COURSES PARTICIPATED IN/TALKS GIVEN

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- SEP. 2021 German Astronomical Society Meeting 2021, 16 Sep, 2021 (*Zoom talk*)
- AUG. 2021 SDSS-IV Collaboration Meeting 2021, 12 Aug, 2021 (*Zoom talk + poster*)
- JUL. 2021 MIAPP Workshop: High-Energy Plasma Physics Phenomena in Astrophysics, MIAPP, Garching, Jul 19 - 30, 2021 (*Zoom participant*).
- JUN. 2021 IMPRS<sup>1</sup> AC<sup>2</sup>: AGN Physics, MPE, Garching, 28 Jun - 2 Jul, 2021.
- JUN. 2021 MPA Galaxy Group Retreat, Fraueninsel, Chiemsee, 14-17 June, 2021 (*Talk*).
- MAY. 2021 Galaxy Group Meeting, MPA, Garching, 26 May, 2021 (*Talk*).
- APR. 2021 IMPRS AC: Astropysical Dynamics, MPE, 12 Apr - 23 Apr, 2021.
- JAN. 2021 Fundamental of Gaseous Halos Workshop, KITP, UCSB, 11 Jan - 5 Mar, 2021, (*Participant*).
- NOV. 2020 IMPRS AC: Cosmic Microwave Background, MPE, Garching, Nov 3 - Dec 3, 2020 (*Zoom*).
- OCT. 2020 Galaxy Introductory Symposium, MPA, Garching, 27 Oct, 2020 (*Talk*).
- OCT. 2020 Institute Seminar, MPA, Garching, 26 Oct, 2020 (*Talk*).
- JUL. 2020 IMPRS Students’ Symposium, MPE, Garching, 30-31 July, 2020 (*Talk*).
- JUL. 2020 Galaxy Group Meeting, MPA, Garching, 17 July, 2020 (*Talk*).
- MAR. 2020 IMPRS AC: Galaxy Formation and Evolution, MPE, 2 Mar - 6 Mar, 2020.

<sup>1</sup> International Max Planck Research School    <sup>2</sup> Advance Course (1-2 weeks)

NOV. 2019 IMPRS AC: Cosmic Structure Formation, MPE, 25 Nov - 29 Nov, 2019.  
 OCT. 2019 CGM 2019: CGM Conference, Berlin, 3 Oct - 5 Oct 2019 (*Participation*).  
 AUG. 2019 SUMMER SCHOOL: Galaxy Formation, AKSS, Spetses, 28 Aug - 5 Sept 2019.  
 MAY. 2019 IMPRS Soft Skills Course: Python Programming, MPE, Garching, 6-10 May 2019.  
 APR. 2019 IMPRS AC: Galaxy Evolution from the Galaxies' Perspective, MPE, 8-12 Apr'19.  
 MAR. 2019 IMPRS Soft Skills Course: Git/Bash Programming, MPE, Garching, 19-22 Mar 2019.  
 JAN. 2019 IMPRS AC: High Resolution Imaging Methods in Astronomy, MPE, 14-18 Jan'19.  
 NOV. 2018 PYTHON for HPC, attended at MPCDF, Garching, 20-21 Nov 2018.  
 DEC. 2016 Analysis of Wilberforce Pendulum, *talk* NIAS, Bangalore, Dec, 2016.  
 MAR. 2016 Neighbourhood Astronomy Meeting, held at ICTS, Bangalore, Mar, 2016.  
 JUL. 2013 Multiwavelength study of star cluster NGC1931, *talk*, ARIES, Nainital, Jul, 2013.

## RESEARCH INTERESTS

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CIRCUMGALACTIC MEDIUM    Constraining CGM properties using large spectroscopic surveys.  
 GALAXY EVOLUTION        How galaxy properties affect the nature of CGM?.  
 DATA ANALYSIS         Developing new tools to analyze large astronomical dataset.

## AWARDS AND ACHIEVEMENTS

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SEPT 2018-    IMPRS PhD Fellowship.  
 SEPT'17 - JUL'18    UGC<sup>3</sup> - Junior Research Fellow (JRF), NIAS, Bangalore.  
 AUG'12 - JUL'17    Institute Scholarship, Indian Institute of Science, Bangalore.

## RESEARCH EXPERIENCE

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SEPT 2018-    IMPRS PhD student at Max-Planck-Institut für Astrophysik (MPA), Garching.  
                   *Constraining circumgalactic medium properties with large spectroscopic surveys*  
                   Adviser: Prof. Dr. Guinevere Kauffmann, MPA, Garching.  
                   Co-Adviser: Dr. Dylan Nelson, ITA, Heidelberg.  
                   Studying the physical nature of CGM around different types of galaxies and constraining their density and kinematic properties.

SEPT 2017-    UGC-JRF at National Institute of Advanced Studies (NIAS), Bangalore.  
 JUL 2018        *Nonlinear oscillatory phenomena in sensory systems*  
                   Adviser: Prof. Janaki Balakrishnan, NIAS, Bangalore.  
                   Worked on mathematical models to understand the nonlinear oscillations and bursting phenomena in sensory neurons using mechanical oscillatory systems.

JUN 2017-    Remote Intern at BMSIS Young Scientist Program.  
 MAY 2018        *Radiation effects on astronaut health*  
                   Adviser: Dr. Dimitra Atri, New York University, Abu Dhabi.  
                   Computed radiation doses using simple tools (Geant4) to understand and estimate the effects of long-term radiation exposure on astronaut health.

JUN 2016-    Master's Thesis Project:  
 APR 2017        *A sensitive search for HI 21 cm line in the superdisks of large radio galaxies*  
                   Adviser: Dr. Nirupam Roy, Indian Institute of Science, Bangalore.  
                   Analyzed the VLA continuum data of the radio galaxies 3C98, 3C227, 4C+32.25 and 3C192 to search for HI 21 cm from the 'superdisks' that have been hypothesized to account for strip-like radio emission gap observed between the twin radio lobes.

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<sup>3</sup> University Grants Commission, Govt. of India

- OCT 2016-  
DEC 2016 | Short-term Project:  
*Analysis of Damped Wilberforce pendulum*  
Adviser: Prof. Janaki Balakrishnan, IAS, Bangalore.  
Found the normal modes and coordinates of the undamped and damped Wilberforce pendulum with a detailed stability analysis to study the behaviour of the system.
- JUN 2015-  
APR 2016 | Bachelor's Thesis Project:  
*Calculation of Continuum Opacity in Hydrogen deficient stars*  
Adviser: Prof. Gajendra Pandey, Indian Institute of Astrophysics, Bangalore.  
Found the major sources of continuum opacity in cool hydrogen deficient stars by theoretically computing the continuum opacity as the function of wavelength and temperature. I used STERNE code and The Opacity Project for this purpose.
- JUN 2014-  
AUG 2014 | Short-term summer Project:  
*Semi-empirical mass formula and its applications to nuclear reactions*  
Adviser: Prof. Rohini Godbole, Indian Institute of Science, Bangalore.  
It was a short reading project in nuclear physics where I tried to understand the basic physics behind the semi-empirical mass formula and its applications to predict the nuclear reaction products.
- MAY 2013-  
JUL 2013 | Short-term summer Project:  
*Multiwavelength photometric study of young open star cluster NGC1931*  
Adviser: Dr. Saurabh Sharma, ARIES, Nainital.  
I did a multiband (UBVRI) photometric analysis of young open star cluster NGC1931 using IRAF, to find the cluster's distance, age and interstellar reddening.

## LANGUAGES

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HINDI: Mother tongue  
ENGLISH: Full professional proficiency  
GERMAN: Very basic Knowledge (A2.1)

## COMPUTER SKILLS

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Languages: PYTHON  
Packages/Tools: NumPy, Matplotlib, SciPy, Astropy  
OS/Applications: Windows, Linux, Macintosh,  $\text{\LaTeX}$ , MS-Office

## INTERESTS AND ACTIVITIES

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Member of Local organizing Committee of VII<sup>th</sup> IMPRS Student Symposium, 4-5 Apr, 2019.  
Served as online physics tutor at E-acharya<sup>4</sup> from June 2017 - Aug 2018.  
Organized scientific and technical workshops in "Pravega"<sup>5</sup>, during Jan 2014.  
Science & Technology, Programming, Politics.  
Table Tennis, Origami, Playing Flute.  
Poet at: <https://baryonicpoet.wordpress.com/>

Last updated on 2021-09-16

<sup>4</sup> an initiative to help poor students in sub-urban and rural areas of Bihar, India. <sup>5</sup> the Annual Science & Cultural Festival of the Indian Institute of Science.