

BIODATA

Dr. Varnana M Kumar
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EDUCATION

- 2014 - 2019** Ph.D. in Physics, Date of award: 23-10-2020
- 2013 - 2014** MPhil in Physics (A grade), University of Kerala
- 2012 - 2013** B.Ed. in Physical Science (81.5 %), University of Kerala
- 2009 - 2011** M.Sc. (78%) in Physics specialization in Electronics, University of Kerala
- 2006 - 2009** B.Sc. (94.7 %) in Physics with specialization in Physics, Chemistry and Mathematics, University of Kerala

RESEARCH EXPERIENCE

December 2014 - October 2019: Research Scholar with Kerala Junior Research Fellowship, University of Kerala in the Department of Physics, University College Thiruvananthapuram, Kerala. (*Title of Thesis: Investigations on the internal heat and volcanism in Rocky Planetary bodies*).

October 2019 – December 2019: Research Scholar in Department of Physics, Govt. College for Women Thiruvananthapuram, Kerala. (*Title of Thesis: Investigations on the internal heat and volcanism in Rocky Planetary bodies*).

TEACHING EXPERIENCE

(i) Previously worked as Assistant Professor in Physics on Contract in the Department of Physics, Mar Ivanios (Autonomous) College Trivandrum, Kerala, since 5 November 2021 (Contract date upto 31st March 2022)

(ii) Worked as Assistant Professor in Physics (Guest basis) in the Department of Applied Science, in Sree Chithra Thirunal College of Engineering, Thiruvananthapuram, Kerala from 27 January 2021 to 3 November 2021.

(iii) Previously taken coaching classes on Mathematical Physics for National Eligibility Test conducted by CSIR at a non-government institution named CSC, Thiruvananthapuram.

(iv) Taught Physics, Chemistry and Mathematics for college students at a non – government organization named CAPITAL Academy, Thiruvananthapuram.

AWARDS AND MERITS

(i) Selected for the training of IPR under Women Scientist Scheme (WOS-C) sponsored by Department of Science and Technology, Government of India.

(ii) One of the arxiv paper entitled Cessation of volcanism in Earth –Possibilities in the near geological future selected as the best of the Physics arxiv paper from MIT Technology Review in August 2018.

(iii) 02-2018 IAU Travel Grant for participate in the IAU Symposium 340 held in Jaipur, India.

(iv) 09-2019 IIA Travel Grant for participate in the Young Astronomers Meet (YAM 209) held at Kodaikanal Solar Observatory.

(v) Cleared Govt. of Kerala State Eligibility Test (SET – 2015) in Physics

LIST OF RESEARCH PUBLICATIONS

Varnana M Kumar., Thara N. Sathyan, N. G. Nisha, S. Aranya, and T. E. Girish. "Inference of Magnetic fields and space weather hazards of rocky extrasolar planets from a dynamical geophysical model." Proceedings of the International Astronomical Union IAU 362, (2022)(Accepted for Publication).

Varnana M Kumar., Thara N. Sathyan, N. G. Nisha, S. Aranya, and T. E. Girish. "Inferring Stellar Activity Variations near Habitable Extrasolar Planets using Dynamical Effects." Proceedings of the International Astronomical Union, IAU 340, (2018): pp 297-298 (ISSN 2279-0543, Scopus)

Thara N Sathyan , Sheeja F R , T.E.Girish, **Varnana M Kumar** , C.Sunil Kumar Moarais and Biju Longhinos. Some studies on geophysical and health physics aspects of ground water radon in Kerala. International Journal of Scientific Research and Reviews. 7(3), 101-116 (2018) (ISSN-2279-0543)

BOOK CHAPTER

T.E. Girish , Thara. N. Sathyan and **Varnana. M. Kumar** (2021) Technological Relevance and Photovoltaic applications of High Silica Deposits on Mars, in: Sheila. G. Bailey et al (Eds), Photovoltaics for Space, Elsevier , USA

PREPRINT PUBLICATIONS (ARXIV PAPER)

Varnana M.Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker, Cessation of Volcanism on Earth-Possibilities in near geological future. arXiv preprint

arXiv:1808.01333, (2018)., selected as best of the Physics ariv paper (week ending August 18, 2018 of MIT Technology Review.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker, On The Geological Time Evolution of Volcanism in the Inner Solar System. arXiv preprint arXiv:2005.13200.

Varnana M Kumar., Girish, T. E., Sathyan, T., Longhinos, B., & Panicker, A. A.(2021). Evidence for Critical Internal heat values during Significant Geophysical Transitions in the Inner Solar System Planetary bodies in association with Volcanism. arXiv preprint arXiv:2105.05676.

PAPER PRESENTATIONS IN CONFERENCES

Varnana M. Kumar, T. E. Girish, T. N. Sathyan, B. Longhinos, J. Binoy .,Tidal heating in potentially habitable extrasolar planets 28th Young Scientists' Conference on Astronomy and Space Physics October 24–28, 2022 Kyiv, Ukraine

Varnana M Kumar, Sathyan, T., Girish,T.E., Longhinos ,B., Binoy,J. Inference of magnetic fields and space weather hazards of rocky extrasolar planets from a dynamical geophysical model, paper presented in IAU Symposium 362“The Predictive Power of Computational Astrophysics” during November 8-12,2021 at France

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Inferring time evolution of volcanism in extrasolar planets and its implications on habitability, paper presented in HabWorlds 2021 presented in American Astronomical Society February 27-29 ,2021.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker, Evidence for critical internal heat values during significant geophysical transitions in the inner solar system planetary bodies in association with volcanism, paper presented in "Indian Planetary Science Conference (IPSC)-2021" during 25-26 February 2021 in a Fully VirtualMode.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Inferring Volcanic Activity in Potentially Habitable Extrasolar Planets, paper presented in Young Astronomers Meet, Kodaikanal Solar Observatory, 23- 27 September 2019.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Time Evolution of Volcanism on the Earth and its Implications for Biological Evolution, paper presented in EGU General Assembly, Vienna, Austria ,07-12 April 2019.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Comparison between Geological and Biological Evolution of Earth, paper presented in National Seminar on Foundations in Theoretical Physics and Astronomy, Department of Physics, University College, Thiruvananthapuram, 31 October- 02 November 2018.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Evolution of Life, Mass Extinctions and Volcanic History of Earth, paper presented in National Seminar on Effects of Paleo and Anthropogenic Events on Earth System” EPAEVENTS2018SALEM and Annual General Meeting of Geological Society of India during 19-21 September 2018.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Inferring stellar activity variations near habitable extra solar planets using dynamical effects, paper presented in Long – Term Datasets for the Understanding of Solar and Stellar MagneticCycles, IAU Symposium 340, Birla Auditorium, Jaipur, 19-24 February 2018.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Possible Cessation of Volcanic activity in Earth In near future, paper presented in National Seminar on Modern Trends in Physics, November 2017.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Geothermal Energy Conversion Possibilities in Moon and Mars, paper presented in National Seminar on “Advances in Functional Materials” organized by Department of Physics, All Saints’ College, Thiruvananthapuram, 19-20 September 2017.

Varnana M Kumar., Girish, T. E., Longhinos, B., Satyan, T., and Anjana, A.V. Panicker Finding Radiogenic Heating and Tectonic Activity in Potentially Habitable Extrasolar Planets, paper presented in National Space Science Symposium, Thiruvananthapuram, 09-12February 2016. Radiogenic heating and volcanic activity in Earth, Mars and Venus, paper presented in International Conference on GEOSCIENCES AND ENVIORNMENT and 32Nd ANNUAL CONVENTION OF INDIAN ASSOCIATION OF SEDIMENTOLOGISTS and ONE DAY WORKSHOP ON SHALE OIL and GAS EXPLORATION 7-10 January, 2016.

TRAINING COURSES / SEMINARS ATTENDED

Webinar on Intellectual property rights organized by Internal Quality Assurance Cell and Learning and Information Resource Centre of St. Francis Institute of Management and Research, held on 15 January, 2022.

Hands on training in Latex Documentation Tool, organized by Department of Physics, Sree Chitra

Thirunal College of Engineering Trivandrum, Kerala held from 24.09.2021 to 25.09.2021.

Short course on “Space and Atmospheric Science” organized by CSSTEAP, Dehradun and conducted by Physical Research Laboratory, Department of Space, Ahmedabad, India during December 7-14, 2020.

National Seminar on Differential Equations and Applications organised by the Department of Mathematics, University College, Thiruvananthapuram held during November 14-15, 2019

National Seminar on Foundations in Theoretical Physics and Astronomy organised by Department of Physics, University College, Thiruvananthapuram, held during 31 October 2018- 02 November 2018.

Workshop on Statical Analysis in Cosmology organised by Inter University Centre for Astronomy and Astrophysics (IUCAA) and Department of Physics, Cochin University of Science and Technology held during January 12 -14,2017

National Seminar on Recent Advances in Physics, organised by the Department of Physics, University College, Thiruvananthapuram held during March 8-9,2017

National Seminar on Modern Trends in Physics, organised by the Department of Physics, University College, Thiruvananthapuram held during November 23-24,2017

National Seminar on Current Perspectives in Physics, organised by the Department of Physics, University College, Thiruvananthapuram held during February 15-16, 2016.

National Seminar on Space Physics and Quantum Mechanics organised by the Department of Physics, Government Arts College, Thiruvananthapuram held during February 18-19, 2016.

26th National Seminar and International Exhibition on Non-Destructive Evaluation, Pre-Conference Tutorials on Corrosion Detection, Measurement and Evaluation held at ATF Campus, VSSC, Thiruvananthapuram during 13- 14 December 2016

Summer School on Advanced Physics at Department of Physics, University College, Thiruvananthapuram held from April 18- 23 , 2016.

Organising committee Member Member in 34th Kerala Science Congress, 10-12 February 2022, Kerala State Council for Science Technology and Enviornment Trivandrum, Kerala.

DECLARATION

I hereby declare that all the information given here are true, correct and complete to the best of my knowledge and belief.

Dr. Varnana M Kumar