



Dr. RAJ KUMAR

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ABOUT ME

I am Dr. Rajkumar, an accomplished professional holding a Ph.D. in the specialized domains of seismology and space geodesy. My doctoral research, titled "Unraveling Geodynamics and Earthquake Hazards in Northeast India Using Seismo-Geodetic Data," serves as a testament to my proficiency in utilizing advanced techniques for the analysis and interpretation of intricate seismic and geodetic data. Motivated by a fervent desire to comprehend the nuances of Earth's dynamics, I have made significant contributions to unraveling geodynamic processes and understanding earthquake hazards, particularly in the unique context of Northeast India. With a robust foundation encompassing both theoretical knowledge and practical applications, I bring to any professional setting a distinctive skill set and a wealth of insights within the fields of seismology and space geodesy. During my Doctoral studies i have been awarded by the Inspire fellowship from the DST.

EDUCATION AND TRAINING

07/2011 – 06/2014 Delhi, India

B.SC (H) PHYSICS Hindu College, University of Delhi

Website www.du.ac.in | **Final grade** 71.36%

07/2014 – 06/2017 Dhanbad, India

M.SC TECH IN APPLIED GEOPHYSICS IIT(ISM) Dhanbad

A method based on the concept of Enhanced Local Wave number technique - a model independent approach, has been developed to interpret EM anomalies. An equation involving only two unknown source parameters, viz., horizontal location and depth has been presented. The nature of the causative source has been determined by computing structural indices based on these parameters.

Website www.iitism.ac.in | **Field of study** Geophysics | **Final grade** 8.12 |

Thesis Interpretation of electromagnetic anomalies by enhanced local wave number technique

04/2018 – 04/12/2023 Dhanbad, India

PHD IIT(ISM) Dhanbad

The thesis embarks upon an important study related to the earthquakes caused by active faults in the Northeast Himalayan region of India. The primary focus of the study is to estimate the seismogenic depth of active faults in the region. This is achieved by implementing a dense network of seismic data. The work entails calculating the coupling ratio and sleep deficit for seismic hazard assessment of the region of study. This is achieved by using an inversion technique that translates geodetic displacement data into a unified analytical window. The investigation of tectonics in the north-eastern Himalayan region includes a thorough understanding of parameters like stress analysis, kinematic implications, and interseismic deformation. The seismicity of the region is understood through the application of a focal mechanism solution and GPS measurement provides new insights into the study of the seismotectonic characteristics of North East India. Thus my doctoral work provides new insights into the seismotectonic characteristics of Northeast India,

Website www.iitism.ac.in | **Field of study** seismology and space geodesy |

Thesis unraveling geodynamics and earthquake hazards in the northeast himalayas using Seismo-geodetic data

● **HONOURS AND AWARDS**

2011

Inspire Scholarship – Department of Science and Technology (GOI)

2017

Inspire Fellowship – DST(GOI)

I have been awarded by the DST Inspire Fellowship for a period of 5 years.

● **WORK EXPERIENCE**

06/2018 – 08/2023 Dhanbad, India

DST INSPIRE FELLOW IIT(ISM)

During my thesis at NCS MoES Delhi, I adept at handling and analyzing both seismological and geodetic data, showcasing proficiency in these domains. In addition to these capabilities, I have also worked extensively with Insar data. Using the GMTSAR software, I processed Insar data and generated time series using SBAS, showcasing a comprehensive skill set in data processing and analysis.

● **SOFTWARE KNOWLEDGE**

Software Knowledge

Seisan, ISOLA, MATLAB, Stressinverse, Coulomb, GAMIT-GLOBK, TDEFNODE, GMTSAR (InSAR data processing and time series analysis) SBAS

● **RECOMMENDATIONS**

Dr. Sanjit Kumar Pal My Doctoral guide

Professor and Head of the department IIT (ISM) Dhanbad

Email sanjitismagp@iitism.ac.in | **Phone** (+91) 9608822343

Dr. Sanjay Kumar Prajapati My Doctoral Coguide

Scientist F, NCS MoES Delhi

Email sanjaynecessary@gmail.com | **Phone** (+91) 7827537583

Dr. O P Mishra

Scientist- G, Director NCS MoES

Email opmishra2010.saarc@gmail.com

● **PUBLICATIONS**

2022

[Determination of focal depths of moderate earthquakes in the Northeast Indian region using depth phase sPn.](#)

Rajkumar , Prajapati, S.K., Pal, S.K. et al. 2022 Nat Hazards 114, 427–455 (2022).

2023

[Comparison of the Felt Earthquakes since Historical Times with NCS Catalogue and ISR Telemetry Network in Gujarat \(2006 to date\).](#)

Srivastava, H.N., Prajapati, S.K. & Rajkumar ,2023. J Geol Soc India 99, 1211–1217 (2023).

Interseismic Fault Coupling and Slip Rate Deficit on Major Active Faults in North-eastern India Based on Geodetic Measurements and Block Modelling for Advancing Future Seismic Hazard Scenarios.

Rajkumar , Sanjay K. Prajapati, Sanjit K. Pal & O. P. Mishra (under review in GJI)

Current Crustal Deformation in Northeast Orogeny Reassessed by Continuous GPS Strain Estimation and Stress Inversion by Focal Mechanism

(under preparation)

● **CONFERENCES AND SEMINARS**

EGU23 Poster Presentation

Seismotectonics of the northeast Indian region based on GPS velocities, stress and strain rate field characterization" by **Rajkumar**, Sanjay Kumar Prajapati, Sanjit Kumar Pal, and Om Prakash Mishra, session TS3.9, abstract EGU23-11133

FIGA

Sanjay K Prajapati, **Rajkumar**, Auchitya Pandey, Partha Sarkar and O.P. Mishra (2022), Coseismic deformation field and source modelling for the Mw 6.1 Afghanistan event of June 21, 2022 by means of Seismic waveform and InSAR, FIGA, WIHG

● **PROJECTS**

Seismological and Space-geodesy data analysis

Adept in formulating and executing intricate methodologies to leverage seismological and GPS data, effectively deciphering geodynamic phenomena and seismic hazards. Possessing a proven track record in meticulous data collection, rigorous analysis, and insightful interpretation, adept at synthesizing diverse datasets to extract valuable conclusions. Proficiency in establishing seismological and GPS observatories enhances the ability to contribute to a holistic understanding of intricate geophysical processes, particularly in intricate terrains—making an invaluable contribution to postdoctoral research endeavors.