

# RASHID SHAMS

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## AREA OF INTEREST

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Ground Motion Models, Seismic Site Response, Seismic Site Characterization and Geo-technical Earthquake Engineering

## EDUCATION

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**Doctor of Philosophy** **Aug,2022-Ongoing**  
**Specialization- Civil Engineering (Geotechnical)**  
**University of Southern California (USC), Los Angeles, USA**

**Master of Science** **May,2023-Ongoing**  
**Specialization- Civil Engineering (Structural)**  
**University of Southern California (USC), Los Angeles, USA**

**Master of Technology** **2020-2022**  
**Specialization- Earthquake Science and Engineering**  
**Indian Institute of Technology (Indian School of Mines), Dhanbad, India**  
Grade/Marks- **9.42/10 (Gold Medalist)**

**Bachelor of Technology** **2016-2020**  
**Specialization- Civil Engineering**  
**Ch. Brahm Prakash Government Engineering College, New Delhi, India**  
Grade/Marks- **8.84/10** (Highest CGPA in batch)

## PUBLICATIONS AND CONFERENCES

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Buckreis, Tristan; Nweke, Chukwuebuka; Wang, Pengfei; Brandenburg, Scott; Ramos-Sepulveda, Maria; **Shams, Rashid**; Pretell, Renmin; Mazzoni, Silvia; Zimmaro, Paolo; Stewart, Jonathan, A Global Application Programming Interface (API)-Enabled Earthquake Ground Motion Relational Database, Earthquake Spectra (Submitted)

Gupta, R.K., Agrawal, M., **Rashid Shams**. (2023), Seismic site response study of Dhanbad city (India) using equivalent linear analysis complemented by horizontal-to-vertical spectral ratios. Environ Earth Sci 82, 291 (2023). <https://doi.org/10.1007/s12665-023-10985-1>

**Rashid Shams**, Agrawal M., (2023), Kappa Model and Coda-Q study for Eastern Chotanagpur Plateau (India), Nat Hazards <https://doi.org/10.1007/s11069-023-05871-9>

**Rashid Shams**, Agrawal, M. & Gupta, R.K. Probabilistic seismic hazard assessment of Kishanganj, Bihar, India. J Earth Syst Sci 131, 257 (2022). <https://doi.org/10.1007/s12040-022-01999-7>

**Rashid Shams**, Mohit Agrawal, (2022), Seismic Site Response Analysis for Various Shallow Sites in Dhanbad City, Jharkhand, India using Non-Linear Approach, Geotechnical and Geological Engineering. (Submitted)

### Database

Buckreis, T.E., C.C. Nweke, P. Wang, S.J. Brandenburg, M.E. Ramos-Sepulveda, **Rashid Shams**, R. Pretell, S. Mazzoni, P. Zimmaro, and J.P. Stewart (2023) Web portal for the global earthquake ground motion relational database. The B. John Garrick Institute for the Risk Sciences. DOI: <https://doi.org/10.34948/G4RP4K>

## Book Chapters

**Rashid Shams**, Hussain, A. (2021). Analysis of Effect of Anti-slide Pile on Stability of Slopes. In: Kumar Shukla, S., Raman, S.N., Bhattacharjee, B., Bhattacharjee, J. (eds) *Advances in Geotechnics and Structural Engineering. Lecture Notes in Civil Engineering, vol 143*. Springer, Singapore. [https://doi.org/10.1007/978-981-33-6969-6\\_22](https://doi.org/10.1007/978-981-33-6969-6_22)

Hussian, A., Mawai, D., **Rashid Shams.**, Kumar, S., Yadav, I.K. (2021). An Experimental Study on Effect of Partial Replacement of Rubber Tyres Dust as Fine Aggregates on Compressive Strength of Concrete. In: Kumar Shukla, S., Raman, S.N., Bhattacharjee, B., Bhattacharjee, J. (eds) *Advances in Geotechnics and Structural Engineering. Lecture Notes in Civil Engineering, vol 143*. Springer, Singapore. [https://doi.org/10.1007/978-981-33-6969-6\\_24](https://doi.org/10.1007/978-981-33-6969-6_24).

## Conferences and Posters

Capturing the Path Dependency of Site Response in Basin and Non-Basin Southern California Locations, *Geo-Congress 2024, 25-28 February 2024, Vancouver, BC (Accepted)*

Geometric Parameters for Seismic Site Response in Sedimentary, *Poster presented at Physics-Based Ground Motion Modeling, SSA, 10-13 October 2023, Vancouver, BC (Accepted)*

Classification Algorithms for Sedimentary Basins in Southern California, *Poster presented at Physics-Based Ground Motion Modeling, SSA, 10-13 October 2023, Vancouver, BC (Accepted)*

Geometric Parameterization of Sedimentary Basins for Seismic Site Response Analysis and Modelling, *Poster presented at Seismology Student Workshop organized by Lamont-Doherty Earth Observatory, Columbia University, 15-17 March, 2023.*

1D Non-Linear Seismic Ground Response Analysis for various locations in Dhanbad City, Jharkhand, India, *Presentation in 58<sup>th</sup> Indian Geophysical Union (IGU), Shillong, India, 2-4<sup>th</sup> Feb. 2022.*

Seismic Hazard Analysis of Kishanganj (India) using Probabilistic Approach, *Presentation in 58<sup>th</sup> Indian Geophysical Union (IGU), Shillong, India, 2-4<sup>th</sup> Feb. 2022.*

Analysis of Seismic Attenuation Characteristics for Eastern Chotanagpur Region, India. *Presented as flash talk presentation in Frontiers of Geoscience Research Conference (FGRC-2021), Physical Research Laboratory (PRL), Ahmedabad, 27-28 Sept 2021.*

Liquefaction Hazard Assessment of Yamuna Bank Region, Delhi. *Presented at the National Conference on Geo-science and Geo-structures (GSGS-2020), National Institute of Technology, Jamshedpur, 3-4 September 2020.*

An Experimental Study on Effect of Partial Replacement of Rubber Dust as Fine Aggregate on Compressive Strength of Concrete. *Presented at International Conference on Smart Cities: Opportunities and Challenges at Jamia Millia Islamia (Central University), 14-16 March, 2019, Delhi.*

## RESEARCH PROJECTS

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### Doctoral Student

Aug 2022- Ongoing

Supervisor- Dr. C.C. Nweke

University of Southern California (USC)

- **Geometric Parameterization of Basins for Site Response Analysis and Modelling**  
Duration- Jan 2023- Ongoing

Funded by – United States Geological Survey (USGS)

Collaborators- PI- Chukwuebuka C. Nweke (USC), Grace Parker (USGS)

Description- This project aims at proposing new site parameters by modelling and parameterizing sedimentary basins in Southern California. My involvement in the project is working with velocity models to model basins, compute parameters from modelled basins, conduct residual analysis and writing the final report.

- **Assessment of Usable Parameter Ranges for CSN and CSMIP Ground Motion Data to Support Ground Motion Modelling and Emergency Response Applications**

Duration- Aug 2022- Ongoing

Funded by - California Strong Motion Instrumentation Program (CSMIP)

Collaborators- Jonathan P. Stewart (UCLA), Shako M. (Graduate Student, UCLA), Chukwuebuka C. Nweke (USC), Tristan Buckeries (UCLA), Monica Kohler (Caltech),Yousef Bozorgnia (UCLA)

Description- The objectives of the proposed work are to evaluate the effective noise threshold of CSN data based on the currently available recordings, and to make available in a public database CSN data that is judged to be reliable along with its associated metadata. My involvement in the project is related to processing non-CSN data using NGA procedures and doing comparisons with CSN data processed by gmprocess.

### **Master's Dissertation Student**

**Dec,2020- 2022\***

Supervisor- Dr. Mohit Agrawal

Indian Institute of Technology (Indian School of Mines)

- **Title- Non-Linear Seismic Site Response Analysis of Dhanbad City, Jharkhand, India.**

Duration – Sept-March 2021

Description- This study is aimed at estimating ground level PGA values for various sites in Dhanbad city using SPT (N value) data from various boreholes spread over the city using 1D Non-Linear analysis.

- **Title- Kappa Model and Coda-Q study for Eastern Chotanagpur Region**

Duration – May-Sept. 2021

Description-The Kappa model and Coda-Q results from this study provides valuable insights to the seismicity of the ECNP region. These results also play important role in Stochastic Simulation of ground motion, which can in-turn help in the development of region-specific Ground Motion Prediction Equation for the Chotanagpur Plateau Region.

- **Title- Probabilistic Seismic Hazard Analysis for Kishanganj District, Bihar (India)**

Duration – Jan-April 2021

Description- In this study Seismic Hazard Analysis is carried out using Probabilistic Approach for Kishanganj district which is situated close of Nepal-Bihar border and is proximal to Indo-Eurasian thrust zone.

### **Bachelor's Thesis Work**

**2019-2020**

Ch. Brahm Prakash Government Engineering College.

- **Title- Analysis of Effect of Anti Slide Pile on Stability of Slopes**

Duration – Jan-March 2021

Description-In this study anti-slide pile was modelled and used to improve stability of the considered soil-slope and analyzed variation of various parameters like pile spacing, length and pile position with respect to FOS of the slope using GEO5 software.

- **Title- Study of Pile-Soil Interaction under Seismic Excitation using Open Sees PL**

Duration – Sept-Dec 2021

Description- In this study an attempt has been made to study behavior of pile in different soil conditions under seismic loading. Numerical analysis of a single pile is carried out for a different soil condition like, C-soils,  $\emptyset$ -Soils and C-  $\emptyset$  soils to understand the soil-pile interaction for the EL-Centro (1940) ground motion. The numerical model is developed by using Finite Element Program Open-Sees PL.

## **INVITED TALKS/ PRESENTATIONS**

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- **Shams Rashid**, Earthquakes and Southern California. STEM Bytes Seminar, Organized by Women in Science and Engineering (WISE), University of Southern California (USC), June 12<sup>th</sup>, 2023.
- **Shams Rashid**, Understanding Non-Ergodic Path Effects in Ground Motion Models and Geometric Parameterization of Basins for Seismic Site Response Analysis. Presentation to Graduate Students in Department of Applied Geophysics, Indian Institute of Technology (ISM), Dhanbad, India, April 2023.

## **TEACHING AND ADMINISTRATIVE EXPERIENCE**

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### **Teaching Assistant**

**Aug-Dec, 2021**

Course Name- Seismic Hazard Zonation (GPC 533)

Responsibilities-TA duties include to facilitate the faculty in smooth running of the class, distribute reading materials and act as the course webmaster. TAs are required to attend the instructor's lecture regularly and solve doubts of students when needed.

### **Class Representative**

**Aug 2020- Present**

M. Tech (Earthquake Sc. and Engg.), IIT(ISM), Dhanbad

### **Class Representative**

**Aug 2016-May, 2020**

B. Tech (Civil Engg.)

## **AWARDS AND ACCOMPLISHMENTS**

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- Das Family Travel Award to attend Geo-Congress 2023 Feb 2023
- CSI grant to attend 2023 EERI Annual Meeting Feb 2023
- **113 out of 120** in TOEFL iBt (Test date- 28-Aug-2021) Sept 2021
- Secured **1<sup>st</sup> rank in 1<sup>st</sup> yr. M. Tech** (Earthquake Sc. and Engg.) batch with 9.7/10 CGPA. May 2021
- **Post Graduate Fellowship** by Ministry of Human Resource Development Govt. of India. Aug,2020- May,2022
- **Qualified GATE 2020** (Graduate Aptitude Test of Engineering) in 2020 with 96 percentiles. March, 2020
- Secured **1<sup>st</sup> rank in the B. Tech** (Civil Engg.) batch with 8.84 CGPA. 2016-2020
- **Merit Scholarship** for Excellence in Academics by Govt. of National Capital Territory of Delhi. 2017-2018

## **SKILLS**

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- **Programming Languages-** MATLAB, Python, R
- **Python Libraries-** NumPy, Pandas, Scikit-Learn, Tensor Flow
- **Software's-** SAC, SEISAN, ArcGIS, QGIS
- **Operating Systems-** Windows, Linux.

## **CERTIFICATIONS AND MISCELLANEOUS**

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- **Mentor, SURE** (Summer Undergraduate Research Experience) USC, Student: Anna Babchanik [Summer 2023].
- Attended 2-day **Reconnaissance Training and Workshop at EERI Annual Meeting 2023**, San Francisco, 11-15<sup>th</sup> April 2023.

- Attended **1-day Short Course Hands-On Workshop for Impactful Geotechnical Extreme Event Reconnaissance by GEER** in UCLA 25<sup>th</sup> March 2023
- **Fundamentals of GIS** course by UC Davis on Coursera. March, 2021
- **Second Round Winner** in Young Scholar's National Research Writing Competition. March, 2021
- Attended International webinar series on Natural Disaster Resilience for Built Infrastructure hosted by IIT Madras. Aug, 2020
- **Getting started with Python** course by University of Michigan on Coursera. July, 2020
- **Seismic Design** course by Skyfi Labs. May, 2020
- **Introduction to Programming in MATLAB** course by Vanderbilt University on Coursera. April, 2020
- NPTEL Course in **Geotechnical Engg. Laboratory** offered by IIT Bombay with elite certificate. Sept, 2018
- NPTEL Course in **Strength of Materials** offered by IIT Kharagpur with elite certificate. Oct, 2017
- Completed online course on Eliademy: **Introduction to C Programming**. April, 2017
- **Rashid Shams**, Analysis of Earthquake Catalogue, and b-value study for Peninsular India, Abstract in Geophysica-2021 (Departmental Newsletter), Department of Applied Geophysics, Indian Institute of Technology, Dhanbad.
- **Rashid Shams**, Geotechnical Engineering and Leaning Tower of Pisa, Online Magazine for Emerging Geotechnical Aspirants (OMEGA), 2020, Indian Geotechnical Society Silchar Student Chapter (IGSSC), National Institute of Technology, Silchar, India.

## REFERENCES

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- **Dr. Chukwuebuka C. Nweke**

Assistant Professor, Civil and Environmental Engineering (CEE), University of Southern California (USC)

Email- [chukwueb@usc.edu](mailto:chukwueb@usc.edu)

- **Dr. Mohit Agrawal**

Assistant Professor, Dept. of Applied Geophysics, Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand. Email-[mohit@iitism.ac.in](mailto:mohit@iitism.ac.in), Mob- +918804172323.

- **Dr. Athar Hussain**

Professor and Head (Civil Engg. Dept.),

Dept. of Civil Engg., Netaji Subash University of Technology West campus (NSUT- West campus), Jaffarpur, Delhi. Email- [athar.iitr@gmail.com](mailto:athar.iitr@gmail.com), Mob- +919310692172.

## PERSONAL DETAILS:

Date of Birth: November,24, 1998

Nationality: Indian.

