Dr. Goutam Mondal

Assistant Professor
School of Infrastructure
Indian Institute of Technology Bhubaneswar
Samantapuri, Bhubaneswar-751 013
Email: gmondal@iitbbs.ac.in; goutam.mondal@gmail.com

Date of Birth: 18 March 1979

Nationality: Indian

Research Interests

- Earthquake Engineering; Structural Dynamics; Reinforced Concrete Structure; Masonry Infilled RC Frame; Soil-Structure Interaction; Dynamic Analysis of Bridge

Education

- **Doctor of Philosophy (2003-2011)**
  Civil Engineering; Indian Institute of Technology Kanpur, India
  Specialization: Structural Engineering
  Advisor: Professor Sudhir K. Jain
  Thesis: Seismic Analysis of Soil-Well-Pier System for Bridges
- **Master of Technology (2001-2003)**
  Civil Engineering; Indian Institute of Technology Kanpur, India
  Specialization: Structural Engineering
  Advisor: Professor Sudhir K. Jain
  Thesis: Lateral Stiffness of Unreinforced Brick Infilled RC Frame with Central Opening
- **Bachelor of Engineering (1997-2001)**
  Civil Engineering; Jadavpur University, Kolkata

List of Publications

- **Published in Referred Journal**

1. **Mondal, G.**, Tesfamariam, S., "Collapse Vulnerability of RC Frame with Unreinforced Masonry Infills," *Bulletin of Earthquake Engineering*, Under Review.
2. **Mondal, G.**, Tesfamariam, S., (2014) "Effect of Vertical Irregularity and Thickness of Unreinforced Masonry Infill on the Robustness of RC Frame Buildings," *Earthquake Engineering and Structural Dynamics*, Vol. 43, No. 2, pp. 205-223. http://dx.doi.org/10.1002/eqe.2338.
3. Tesfamariam, S., Goda, K. and **Mondal, G.** (2014), "Seismic Vulnerability of RC Frame with Unreinforced Masonry Infill Due to Mainshock-Aftershock Earthquake Sequences," *Earthquake Spectra*. http://dx.doi.org/10.1193/042313EQS111M.
4. **Mondal, G.**, Prashant, A. and Jain, S.K., (2012) "Significance of Interface Nonlinearity on Seismic Response of Well-Pier System in Cohesionless Soil," *Earthquake Spectra*, Vol. 28, No. 3, pp. 1117–1145. http://dx.doi.org/10.1193/1.4000074

5. Rai, D.C, Singhal, V., **Mondal, G.**, Parool, N., Pradhan, T., and Mitra, K. (2012) "M6.9 Nepal-Sikkim Border Earthquake of September 18, 2011," *Current Science*, May, Vol. 102, No. 10, pp. 1437-1446.
6. Rai, D.C, **Mondal, G.**, Singhal, V., Parool, N., Pradhan, T., and Mitra, K., (2012) "Reconnaissance Report of the M6.9 Sikkim (India-Nepal Border) Earthquake of September 18, 2011," *Geomatics, Natural Hazards and Risk*, May, Vol. 3, No. 2, pp. 99-111. http://dx.doi.org/10.1080/19475705.2011.647336
7. **Mondal, G.**, Prashant, A. and Jain, S.K., (2012), "Simplified Seismic Analysis of Soil-Well-Pier System for Bridges," *Soil Dynamics and Earthquake Engineering*, January, Vol. 32, No. 1, pp. 42-55. http://dx.doi.org/10.1016/j.soildyn.2011.08.002
8. **Mondal, G.** and Jain, S.K., (2008), "Lateral Stiffness of Masonry Infilled RC Frames with Central Opening," *Earthquake Spectra*, August, Vol. 24, No. 3, pp. 701–723. http://dx.doi.org/10.1193/1.2942376
9. **Mondal, G.** and Rai, D.C., (2008), "Performance of harbour structures in Andaman Islands during 2004 Sumatra earthquake," *Engineering Structures*, January, Vol. 30, No. 1, pp. 174-182. http://dx.doi.org/10.1016/j.engstruct.2007.03.015
10. Tang, A., Rai, D.C, Ames, D., Murty, C.V.R., Jain, S.K., Dash, S.R., Kaushik, H.B., **Mondal, G.**, Murugesh, G., Plant G., McLaughlin, J., Yashinsky, M., Eskijian, M., and Surrampalli, R., (2006), " Lifeline Systems in the Andaman and Nicobar Islands (India) after the December 2004 Great Sumatra Earthquake and Indian Ocean Tsunami," *Earthquake Spectra*, June, Vol. 22, No. S3, pp. S581-S606. http://dx.doi.org/10.1193/1.2205874
11. Rai, D.C, Murty, C.V.R., Jain, S.K., Kaushik, H.B., **Mondal, G.**, Dash, S.R., Tang, A., Yashinsky, M., and Eskijian, M., (2006), "The Effect of the December 2004 Great Sumatra Earthquake and Indian Ocean Tsunami on Transportation Systems in India's Andaman and Nicobar Islands," *Earthquake Spectra*, June, Vol. 22, No. S3, pp. S561-S579. http://dx.doi.org/10.1193/1.2206809
12. Murty, C.V.R, Rai, D.C., Jain, S.K., Kaushik, H.B., **Mondal, G.**, and Dash, S.R., (2006), "Performance of Structures in the Andaman and Nicobar Islands (India) during the December 2004 Great Sumatra Earthquake and Indian Ocean Tsunami," *Earthquake Spectra*, June; Vol. 22, No. S3, pp. S321-S354. http://dx.doi.org/10.1193/1.2206122
13. Jain, S.K., Ingle, R.K. and **Mondal, G.**, (2006), "Proposed Codal Provisions for Design and Detailing of Beam-Column Joints in Seismic Regions," *Indian Concrete Journal*, August, Vol. 80, No. 8, pp. 27-35.
14. **Mondal, G.** and Rai, D.C., (2006) "Need for earthquake-resistant design of harbour structures in India in view of their performance during the 2004 Sumatra earthquake," *Current Science*, November, Vol. 91, No. 9, pp. 1134-1138.
15. **Mondal, G.**, and Jain, S.K., (2005), "Design of Non-structural Elements for Buildings: A review of Codal Provisions," *Indian Concrete Journal*, August 2005, Vol. 79, No. 8, pp. 22-28.
16. **Mondal, G.** and Jain, S.K., (2005), "Proposed Draft for IS1893 on Design of Non-structural Elements," *Indian Concrete Journal*, October, Vol. 79, No. 10, pp. 39-45.

- **Conference Papers**

17. **Mondal, G.** and Tesfamariam, S., (2012), "Assessment of Robustness of Masonry Infilled RC Frame Buildings with Consideration of Irregularities," *Proceedings of the 15th World*

Conference on Earthquake Engineering, Lisbon, Portugal, 24-28 September. Paper No. 5287.

18. Chavan, D.S., **Mondal, G.** and Prashant, A., (2012), "Permanent Displacement of Nailed Soil Slopes Subjected to Earthquake Loading," *Proceedings of the 15th World Conference on Earthquake Engineering*, Lisbon, Portugal, 24-28 September. Paper No. 5100.
19. Rai, D.C., **Mondal, G**., Singhal, V., Parool, N. and Pradhan, T., (2012), "2011 Sikkim Earthquake: Effects on Building Stocks and Perspective on Growing Seismic Risk," *Proceedings of the 15th World Conference on Earthquake Engineering*, Lisbon, Portugal, 24-28 September. Paper No. 3708.
20. Pradhan, T., Singhal, V., **Mondal, G**., Parool, N. and Rai, D.C., (2012), "Seismic Vulnerability of Buddhist Monasteries: Evidences from the 2011 Sikkim Earthquake and Dynamic Analyses," *Proceedings of the 15th World Conference on Earthquake Engineering*, Lisbon, Portugal, 24-28 September. Paper No. 3706.
21. **Mondal, G.** and Jain, S.K., (2010), "Two-Dimensional Nonlinear Seismic Analysis of Soil-Well-Pier System Considering Soil Nonlinearity," *Proceedings of the 9th U.S. National and 10th Canadian Conference on Earthquake Engineering*, CD-ROM, Paper No. 950, Toronto, Canada, 25-29 July.
22. **Mondal, G.** and Jain, S.K., (2008), "Effect of Nonlinearity in Pier and Well Foundation on Seismic Response of Bridges," *Proceedings of the 14th World Conference on Earthquake Engineering*, Bejing, China, CD-ROM, 12-17 October.
23. **Mondal, G.** and Jain, S.K., (2006), "Lateral Stiffness of Unreinforced Brick Infilled RC Frames with Central Openings," *Proceedings of the 8th National Conference on Earthquake Engineering*, San Francisco, California, USA, CD-ROM-1, Paper No. 215, 18 – 22 April.

- **Reports/Thesis**

24. **Mondal. G.** and Tesfamariam, S., (2013), "Estimation of Lateral Earth Pressure on Basement Wall Subjected to Seismic Motion," University of British Columbia, Canada, Prepared for ZAP Steel Basement, Canada.
25. Siraj, T., **Mondal. G.** and Tesfamariam, S., (2012), "Service Life Prediction and Life Cycle Cost Assessment of Bridge Deck," OPUS International Consultants (Canada) Limited.
26. **Mondal, G.** (2011), "Seismic Analysis of Soil-Well-Pier System for Bridges," *Doctor of Philosophy Thesis*, Indian Institute of Technology Kanpur.
27. Jain, S.K., and **Mondal, G.** (2007), "Seismic Analysis of Rail cum Road Bridge at Munger across Ganga River in Bihar," Department of Civil Engineering, Indian Institute of Technology Kanpur, India, September, 52 p.
28. Jain, S.K., and **Mondal, G.,** Bhukya, S., (2007), "Seismic Analysis of Rail cum Road Bridge at Bogibil across Brahmaputra River in Assam," Department of Civil Engineering, Indian Institute of Technology Kanpur, India, May, 47 p.
29. **Mondal, G.** (2003), "Lateral Stiffness of Unreinforced Brick Infilled RC Frame with Central Opening," *Master of Technology Thesis*, Indian Institute of Technology Kanpur.
30. Jain, S.K., Murty, C.V.R., Rai, D.C., Malik, J.N., Sheth, A.R., Jaiswal, A., Sanyal, S.A., Kaushik, H.B., Gandhi, P., **Mondal, G.**, Dash, S.R., Sodhi, J.S., Kumar, S, (2005) "The Great Sumatra Earthquake and Indian Ocean Tsunami of December 26, 2004: The Effects in Mainland India and in the Andaman-Nicobar Islands," *EERI Special Earthquake Report*, Vol. 39, No. 4, April, pp. 1-12.

Conferences/Workshops/Seminars Attended

- **International**

1. *14th World Conference on Earthquake Engineering*, Bejing, China, 12-17 October 2008.
2. *8th US National Conference on Earthquake Engineering (8NCEE)*, San Francisco, CA, USA, 18-22 April 2006.

- **National**

1. Seminar on *Advances in Civil Engineering: Perspective of Developing Countries (ACEDEC-2003)*, Hartcourt Butler Technological Institute, Kanpur, India, 15-16 February 2003.
2. Workshop on *Deep Foundations (Well/Piles) for Bridges-Optimal Solutions (WSDFB-2006)*, New Delhi, 29-30 November 2006
3. FIB workshop on *Prefabrication for Low Cost and Seismic-Resistant Housing*, New Delhi, 26 November 2004
4. Short Course on *Seismic Design of Concrete Gravity Dams*, Indian Institute of Technology Kanpur, India, 3-6 March 2009
5. Workshop on *Confined Masonry*, Indian Institute of Technology Gandhinagar, India, 17 - 18 April 2011
6. *e-conference on Indian Seismic Codes*, Indian Institute of Technology Kanpur, 26 January-8 February, 2002.

Employment History

- Assistant Professor (June 2014 onwards)
  School of Infrastructure, Indian Institute of Technology Bhubaneswar, India
- Visiting Faculty (October 2013 to May 2014)
  School of Infrastructure, Indian Institute of Technology Bhubaneswar, India
- Post-Doctoral Fellow (April 2012 to September 2013)
  School of Engineering, University of British Columbia, Okanagan Campus, BC, Canada
- Post-Doctoral Fellow (October 2011 to January 2012)
  Department of Civil Engineering, Indian Institute of Technology Kanpur, India
- Senior Project Associate (January 2010 to September 2011)
  Department of Civil Engineering, Indian Institute of Technology Kanpur, India
- Teaching Assistant (December 2003 to November 2008)
  Department of Civil Engineering, Indian Institute of Technology Kanpur, India
- Senior Project Associate (April 2003 to November 2003)
  Department of Civil Engineering, Indian Institute of Technology Kanpur, India
- Teaching Assistant (August 2001 to March 2003)
  Department of Civil Engineering, Indian Institute of Technology Kanpur, India

Research Experience

- **Post-Doctoral Fellow**
  (October 2011 to till September 2013)
  - *Collapse Vulnerability of RC Frame with Unreinforced Masonry Infills*

-Performed incremental dynamic analysis to investigate the collapse vulnerability of masonry infilled RC frame

- *Effect of Irregularities on the Seismic Robustness of Masonry Infilled RC Frame*

  -Performed nonlinear static and incremental dynamic analysis to investigate the effect of vertical irregularities on robustness of masonry infilled RC frame

- *Experiments on Reinforced Brick Slab*

  -Performed experiments on RB slab to propose retrofitting strategies for such slabs

  -Prepared six half-scale brick slabs and tested them under static load.

- **Graduate Student Researcher in Doctor of Philosophy**
  (August 2005 to January 2011)

  - *Seismic Analysis of Soil-Well-Pier System for Bridges*

    -Investigated the effect of interface nonlinearity (Sliding, Separation and Uplift) on the response of well and pier

    -Studied the seismic response of soil, well and pier in detail

    -Proposed a 1D spring-dashpot model

  - *Seismic Design of Non-Structural Elements*

    -Reviewed of design philosophy and design provisions on non-structural element specified in Indian code (IS 1893) and several international seismic codes, and compared of design lateral forces recommended in these codes

    -Proposed provisions on non-structural element for possible inclusion in IS 1893 along with detailed commentary on the proposed clauses

  - *Seismic Design of Beam-Column Joints*

    -Reviewed seismic design provisions on beam-column joints specified in Indian code (IS 1893)

    -Proposed codal provisions for design and detailing of beam-column joints in seismic regions

  - *Seismic Design of Gravity Column*

    -Proposed codal provisions for design and detailing of gravity column for the possible inclusion in Indian code (IS 1893)

- **Graduate Student Researcher in Master of Technology**
  (January 2002 to March 2003)

  - *Lateral Stiffness of Masonry Infilled RC Frames with Central Opening*

    -Proposed simple expression for estimating lateral stiffness of masonry infilled RC frames with central opening

  - *Seismic Design of Bridges*

    -Prepared draft for IRC6 for provisions on seismic design of bridges

Teaching Experience

- Visiting Faculty at School of Infrastructure, IIT Bhubaneswar (from October 2013)

  Courses taught: Advanced structural analysis; Design sessional

- **Supervisor:** Partially supervised four Mtech students during PhD and Post-doc
- **Thesis and Paper Review:** Reviewed one PhD thesis, four Mtech Thesis and more than fifteen journal and conference papers
- **Invited Speaker**

1. Lecture on *Seismic Design of Well Foundation*, in short course on Design of Highway Bridges at IIT Bhubaneswar, 09 May - 11 May 2014.
2. Lecture on *Lateral Stiffness of Brick Infilled RC Frame with Central Opening*, in Literature Review Workshop for PG Students from Engineering College across India, Department of Civil Engineering, IIT Kanpur, 27 August - 05 September 2007.
3. Lecture on *Lateral Stiffness of Brick Infilled RC Frame with Central Opening*, in Literature Review Workshop for PG Students from Engineering College across India, Department of Civil Engineering, IIT Kanpur, 21-26 August 2006.
4. Lecture on *Lateral Stiffness of Unreinforced Brick Infilled RC Frame* in Literature Review Workshop for PG Students from Engineering College across India, Department of Civil Engineering, IIT Kanpur, 29 August – 03 September 2005.
5. Lecture on *Modelling of Unreinforced Brick Masonry Infills in RC Frame Buildings* in Short Course on Seismic Evaluation and Strengthening of Structures, Department of Civil Engineering, IIT Kanpur, 8-12 August 2005.

- **Teaching Assistant**

1. Assisted in Conducting Several Courses at Undergraduate and Post -Graduate Levels in the Department of Civil Engineering, Indian Institute of Technology Kanpur, India (Courses: Earthquake Engineering, Structural Dynamics, Introduction to Civil Engineering, Mechanics of Solids, Engineering Graphics**)**
2. Assisted in Conducting the Course *Structural Dynamics* in One-Semester Certificate Programme in "Earthquake Resistant Design" for Teachers across India during 31 July to 5 December 2003 at the Department of Civil Engineering, Indian Institute of Technology Kanpur as Part of the National Programme on Earthquake Engineering Education (NPEEE)

Industrial Experience

- June 2000: *Calcutta Metropolitan Development Authority (CMDA), Kolkata (INDIA).* Supervised the bore piling work in connection with the work of "Construction of Southern Approach Road & Viaduct on E.M. by-pass for Railway-over-bridge over Eastern Railway Line near Baghajatin Railway Station"

Consultancy

- December 2006 - May 2007: Seismic Analysis of Rail cum Road Bridge at Bogibil across Brahmaputra River in Assam, India, original design by M/s. Rites Ltd., New Delhi.
- May 2007 - September 2007: Safety evaluation and verification of Rail cum Road Bridge across Ganga River at Munger in Bihar, India, original design by M/s. Rites Ltd., New Delhi.

Reconnaissance of Earthquake Affected Area

A member of the post-earthquake reconnaissance survey team

- **2004 Sumatra Earthquake (M9.1):** Reconnaissance survey was conducted on buildings, roads, harbour structures (jetties, quay walls, breakwaters, sea walls, etc) and several other civil engineering structures in Andaman Islands, India.

- **2011 Sikkim Earthquake (M6.9):** Reconnaissance survey was conducted on buildings, roads, heritage structures and several other civil engineering structures in major towns in Sikkim, India.

Academic Honours and Awards

- Received Post-Doctoral Scholarship at University of British Columbia
- Received Govt. of India scholarship during Ph.D. programme at IIT Kanpur
- Received Govt. of India scholarship during M.Tech. programme at IIT Kanpur
- All India-based examination, GATE (Graduate Aptitude Test in Engineering) percentile 97.36 in 2001

Professional Memberships

- Life Member of Indian Society of Earthquake Technology (ISET)

Computer Skills

- Structural Engineering Software: SAP2000NL, ETABS, ABAQUS, SHAKE, OpenSees
- Computing Software: MATLAB
- Programming Languages: FORTRAN, C
- Operating Systems: Windows 98/XP/7

Extracurricular Activity

- Red one belt holder in Tae-Kwon-Do, a Korean Marshal Art
- Coordinator Tae-Kwon-Do Club IIT Kanpur for the period 2007-2008.
- Maintenance Secretary (Electrical), SBRA, IIT Kanpur, for the period 2007-2008

Signature