



*Seminario*



# **Geotechnical Earthquake Engineering – Theory to Practice at IIT Bombay**

**Prof. Dr. Deepankar Choudhury**

**Indian Institute of Technology (IIT) Bombay,**

**INDIA**

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*Istituto Nazionale di Geofisica e Vulcanologia, Sede dell'Aquila*

*Via dell'Arcivescovado, 8 - 67100 L'Aquila*

*organizzato da Istituto Nazionale di Geofisica e Vulcanologia,  
in collaborazione con Università degli Studi dell'Aquila - Dipartimento di Ingegneria  
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## Geotechnical Earthquake Engineering – Theory to Practice at IIT Bombay

by

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**Abstract:** This seminar mentions about the need for research in the area of geotechnical earthquake engineering due to the significant amount of disasters and losses worldwide due to natural event earthquake. The details of recent researches and development activities in this vibrant and needy area of “Geotechnical Earthquake Engineering” at IIT Bombay, Mumbai, India as carried out by the research group of the speaker will be presented starting with the theoretical developments to practical cases as applied in fields. The importance of the earthquake resistant design and analysis of geotechnical structures like retaining wall, foundation, slope, waterfront retaining structures, landfills, reinforced-soil structures, piles etc. are increasing many fold around the world due to the devastating nature of the earthquake forces. In this presentation, mostly various types of analytical closed-form design solutions with applications for few of the above geotechnical structures under earthquake conditions using conventional pseudo-static approach and recently developed pseudo-dynamic approach will be discussed thoroughly. Also the practical applications for some projects to mitigate seismic hazards with the need for GIS-GPS based soil liquefaction hazard mapping with dynamic soil properties for urban cities and seismic tailings dam design will be discussed in detail.

**About the Speaker:** Prof. Dr. Deepankar Choudhury, a full Professor at Department of Civil Engg., IIT Bombay, Mumbai, India, is an Alexander von Humboldt Research Fellow (experienced category), JSPS Fellow, TWAS-VS Fellow and BOYSCAST Fellow and currently visiting Institute and Laboratory for Geotechnik, Technical University Darmstadt, Germany as Visiting Professor during May-July, 2014. Prof. Choudhury, a throughout GOLD Medalist as 1<sup>st</sup> Class 1<sup>st</sup> with Honours and Distinctions in both



Undergraduate and Master`s program in Civil Engineering, obtained Ph.D. in 2002 from Indian Institute of Science (IISc) Bangalore, India. He received Prof. G. A. Leonard`s Best Ph.D. thesis award in the entire India among all universities for 2001 and 2002 from Indian Geotechnical Society.

Prof. Choudhury received prestigious “Shamsher Prakash Research Award – 2008” given by SP Research Foundation, USA and “Excellent Paper Award – 2008” from International Association for Computer Methods and Advances in Geomechanics (IACMAG), USA for the best paper published in ASCE Journal in 2006. Dr. Choudhury had already received almost all possible Young Scientist/Young Engineer awards from various professional and academic societies of India, like Indian National Science Academy (INSA), Indian National Academy of Engineering (INAE), National Academy of Sciences India (NASI), Indian Science Congress Association (ISCA), Department of Atomic Energy (DAE), Department of Science and Technology (DST), Institute of Engineers India (IEI), Indian Society for Technical Education (ISTE).

Prof. Choudhury is currently the Editorial Board Member of ISSMGE Bulletin, published by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), U.K. and the Honorary Secretary of TC 212 – Deep Foundations of ISSMGE and Member of TC 203 – Geotechnical Earthquake Engg. of ISSMGE. He is also the geo-coalition committee member of International Building Code IBC-1803 on ‘Foundations’ of USA.

His research interest is in the broad area of Geotechnical Earthquake Engineering with application to retaining wall, reinforced soil structures, sea-wall, landfills, piles, foundations, anchors, railway subgrade, soil liquefaction, GIS based seismic hazard mapping etc. Already 10 PhDs and 12 M.Tech. students have graduated under his supervision and currently 9 PhDs and 2 M.Tech. students are working under his supervision at IIT Bombay. He has already published about 170 technical papers in journals and conferences, among which 95 are in refereed Journals. He is a member of various professional societies like ASCE, ISSMGE, GI-ASCE, GEER, IGS, ISET, IEI, ISCA, ISTE, etc. He is the Guest Editor of American Journal of Engineering and Applied Sciences, USA and Editorial Board Member of 2 other International Journals. He also teaches GTE9 course on ‘Soil Dynamics’ at every summer semester at TU Darmstadt since 2010. Prof. Choudhury`s developed video courses on ‘Soil Dynamics’ and ‘Geotechnical Earthquake Engineering’ are available free in YouTube for view worldwide.

Prof. Choudhury had already visited as visiting fellow/scientist/scholar at University of California, Berkeley, USA, TU Darmstadt, Germany, Kagoshima University, Japan, University of Wollongong, Australia, National University of Singapore. He had delivered invited lectures at various institutions worldwide like UC Berkeley, UC Los Angeles, RPI, Oklahoma University, TU Berlin, TU Kaiserslautern, RWTH Aachen, NGI Oslo, University of Sydney, UoW, NUS Singapore, NGI Oslo, Beijing etc. Prof. Choudhury is also an Adjunct Professor of Academy of CSIR, AcSIR, New Delhi, India and connected to CSIR-CBRI Roorkee, India. He is involved in several research and consultancy projects on ‘Geotechnical Earthquake Engineering’ and ‘Foundation Engineering’ worldwide.

