

# VECC Colloquium

Variable Energy Cyclotron Centre, Kolkata

Date: 17.11.2014

-Speaker-

**Prof. Sankar Kumar Nath**

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-Topic-

**Natural Disasters in India with emphasis on Earthquake Genesis & its impending Hazard, Vulnerability and Risk showcasing an integrated scenario for the City of Kolkata**

-on-

**November 24, 2014 (Monday)**

-at-

**11:30 AM**

-at-

**Ajay Divatia Lecture Hall  
VECC, Kolkata**

**All are cordially invited**

*T. K. Bhaumik*  
17/11/2014

**(T. K. Bhaumik)**

**Colloquium Secretary**

**Abstract:** Earthquake inflicted hazards are the most devastating of all the natural calamities. About 56% of total area of our country is vulnerable to seismic activity. Seismic safety of an urban enclosure necessitates accurate prediction of ground shaking level for a return period of 475/2475 years facilitating building code-provisions for earthquake-resistant design through a consorted Seismic Hazard, Vulnerability & Risk Assessment judiciously integrated in GIS on a platform like SELENA / HAZUS for the projection of estimated economic loss due to a probabilistic scenario for the same exposure implicating earthquake mitigation strategies for relief, rescue and rehabilitation. The Kolkata metropolis, the second largest urban agglomeration in India has developed primarily along the eastern bank of the River Hooghly about 150 km north of the Bay of Bengal, right over the Ganges delta in the Bengal Basin, a huge pericratonic Tertiary basin comprising of three structural units. The probability of damage in each seismic hazard zone in Kolkata is estimated in relationship with a given ground motion parameter to evaluate the building performance for a particular seismic event in an open-source seismic risk assessment tool like SELENA which follows the computation protocol of HAZUS considering the building typologies viz. A1, RS2, C1L, C1M, C1H, C3L, C3M, C3H, UFB5-1, UFB5-2, HER and their capacity curves. In Kolkata about 40% buildings fall under the high risk zone in and around the central part of the city which is the oldest part of the Metropolitan whereas about 5-7% buildings are in the severe risk zone, most of which are located in the artificial non-engineered filled-up regions. The economic losses for building repair and replacement have been estimated based on the construction cost of building floor area (per m<sup>2</sup>) for eleven different model buildings available within 300 socioeconomic cluster in Kolkata projecting a total economic loss of about ~152 billion Rupees. Both the structural risk and economic loss maps are expected to contribute towards mitigation efforts against earthquake disaster of the city of Kolkata.

-----\*\*\* **As a part of the Diamond Jubilee Celebrations of Department of Atomic Energy** \*\*\* -----

**Note: Tea / coffee will be served from 11:00 AM onwards.**

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