TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Homi Bhabha Road, Mumbai-400 005

February 11, 2019

ASET Colloquium

Speaker : **Prof. Gunter Steinmeyer** ***(Max Born Institute and Humboldt University, Berlin, Germany)***

Title : **Extreme events in optics: what can we learn to predict ocean rogue waves?**

Date &Time : **Friday 08 March 2019 at 16:00 hrs.**

Venue : **Lecture Theater (AG-66)**

Abstract :

Rogue waves are waves that suddenly appear in the open ocean without any apparent cause. Rogue waves defy Gaussian statistics, that is, they are much taller and appear much more frequently than normal statistical distributions would predict. Nevertheless, the ocean is ultimately a mechanical system, which should bear a minimum amount of predictability. We performed time series analysis with three different rogue-wave supporting systems and find a strongly varying degree of predictability: however, the ocean is, in principle, predictable, yet any long-term prediction of individual rogue waves appears illusory. Moreover, the capability of the ocean to give birth to rogue waves appears to strongly depend on meteorological conditions. This finding may enable avoidance or forecasting of extreme events in a multitude of turbulent systems.

About the Speaker:

Professor Dr. Gunter Steinmeyer obtained his Ph.D. from Institute of Quantum Optics, Hannover University, Germany in 1995.He was a postdoctoral researcher at Massachusetts Institute of Technology, Cambridge and Institute of Quantum Electronics, Swiss Federal Institute of Technology, Zurich, before he joined the Max-Born-Institute, Berlin in 2002. He is currently Head of the Department C2, Solid-State Light Sources, and Professor of Physics at Humboldt-University Berlin. His current research focus is on ultrafast nonlinear optics that covers fundamental studies on optical nonlinearities as well as nonlinear optical methods for the generation or characterization of ultrashort light pulses including carrier envelope phase measurement and stabilization. He has published more than 180 research papers. He is member, Editorial Board of Physical Review A, Physics Letters A and Associate Editor of Optica.

Dr. Satyanarayana Bheesette
(Coordinator, ASET Forum)