



## Physical Research Laboratory, Ahmedabad

### SPECIAL COLLOQUIUM - 13 – 07

**Speaker: Dr. Carlos A. Trallero**

Assistant Professor, Physics Department, Kansas State University, U.S.A.

**Title: Learning about molecules with extreme non-linear optics**

#### Abstract

We exploit the relationship between higher-order harmonic generation (HHG) and photoionization to extract information of the molecular and atomic quantum states. We generate harmonics from very well-aligned molecules, which allow us to make a direct comparison with state of the art theoretical models. Unlike traditional methods, we are able to observe a very rich molecular structure in the molecular frame. Such rich structures include angle and energy dependent resonances and minima and multi-electron effects. In addition, we observe and directly measure contributions to the harmonic generation from different molecular orbitals for the first time. Finally, I'll discuss new optics developments that will potentially have a great impact in the field of strong field-matter interaction and attosecond science.

#### The Speaker

Dr. Carlos A. Trallero did his B.Sc and M.Sc. from the Higher Institute for Nuclear Science and Technology, Havana, Cuba. He obtained his Ph.D. from the Stony Brook University, New York, USA. He was a Postdoctoral Fellow at the National Research Council Canada, Ottawa, Canada (2007-2010) and then joined as Assistant Professor at the James R. Macdonald Laboratory, Physics Department, Kansas State University. His main research interest is in the area of ultrafast and attosecond science. In particular, he is working on development of new molecular spectroscopic methods that yield space, energy and dynamical information of the molecular quantum states. He was awarded Lee Wilcox Prize for Best Experimental Thesis by the Stony Brook University, Stony Brook, New York, USA. He has published about 20 papers in peer reviewed research journals.

**Tuesday: 12 February, 2013, 16:00 hrs.**

**K.R. Ramanathan Auditorium, PRL**

**Tea at 15:30 hrs**

**ALL ARE WELCOME**



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**A YEAR OF NEW SCIENCE, NEW DISCOVERIES and DEEPER SOCIETAL COMMITMENT**