

## **Colloquium**

### **Negative ion states of molecular hydrogen: Quantum dynamics of five particle system**

**E. Krishnakumar**

**RRI, Bangalore**

Electron induced chemistry plays an important role in various industrial applications, in medicine and in basic sciences. One of the recent interests has been in using low energy electrons to control chemical reactions through negative ion resonances in molecules. These resonances may be considered as “transition states” in the reaction of a free electron with a molecule. They also enable very efficient conversion of the electron kinetic energy into chemical energy as the decay of the resonance leads to excited molecules, radicals and negative ions. Despite their enormous significance, modelling these resonances and their dynamics has not met with necessary success. The obvious problem is the coupling of the electronic and nuclear motion and their continua. The simplest system, in this respect is resonances in molecular hydrogen, which is basically a five particle system. Our recent work on this system has thrown up pleasant surprises, while highlighting the limitations of the existing calculations. In this talk, I would present a brief overview of negative ion resonances in molecules with molecular hydrogen as the main theme.

***Monday, May 13<sup>th</sup> 2019***

***4:00 PM (Tea/Coffee at 3:30 PM)***

***Auditorium, TIFR-H***