



**TIFR Centre for Interdisciplinary Sciences,  
Narsingi, Hyderabad 500075**

---

## **Colloquium**

**Agency and the Direction of Time**

**Tarun Menon**

**University of Hyderabad**

Time, unlike space, appears to be directed, at least in the sense that virtually all macroscopic physical processes have a preferred temporal orientation -- they always "point" in the same temporal direction. Statistical mechanics has provided us with a simple and unified characterization of this fact: all (appropriately isolated) processes are arranged in time with lower entropy states towards the past and higher entropy states towards the future. But what accounts for this entropic asymmetry? The received view is that the appropriate explanation has to do with the conditions of the very early universe. I provide an alternate explanation, showing that the entropic asymmetry falls out of a few simple and plausible assumptions about the structure of agents. Statistical mechanics, I argue, is properly understood as a theory about the relationship between agents and the physical systems with which they interact, and the root of the entropic asymmetry is an asymmetry inherent in the structure of agency itself: the temporal direction in which agents can intervene in the world must be opposed to the direction in which they can read records about the state of the world. This asymmetry leads agents to carve up their environment into macroscopic states in a manner that ensures the entropic asymmetry.

***Wednesday, Apr 2<sup>nd</sup> 2014***

***04:00 PM (Tea/Coffee at 03:30 PM)***

***Seminar Hall, TCIS***