

# **Seminar**

## **Fluids at extreme scales**

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I shall talk about two problems of fluid mechanics at two extreme scales: one astrophysical and one biophysical connected through the same unifying principles. The first one is about the Ap stars – stars that are of type A but has an over-abundance of heavy elements, e.g., Strontium. The usual explanation of this over-abundance is that here is reduced turbulent mixing of heavy elements due to strong magnetic fields that these stars possess. Based on simulations and theory of magnetohydrodynamics (MHD) we show that this explanation is questionable. Next we consider the motion of a red-blood-cell (RBC) in a microfluidic device. Using experiments, theoretical arguments and numerical simulations we are able to design a device that can both measure the typical elastic deformability of red-blood-cells and also segregate them according to their deformability.

***Monday, Dec 11<sup>th</sup> 2017***

***11:30 AM (Tea/Coffee at 11:00 AM)***

***Auditorium, TIFR-H***