

## **Colloquium**

**It is entropy that counts**

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We will discuss applications of Shannon entropy to problems in Combinatorics and Computer Science. We will see examples of inequalities in combinatorics where an informal justification based on considerations of information can be formalised using the notion of entropy. We will discuss the area of randomised two-party communication complexity and use entropy to derive lower bounds for the Set Disjointness problem. Finally, we will discuss Von Neumann entropy, the quantum-mechanical analog of Shannon entropy, and its application in the study of the quantum communication complexity of the Set Disjointness problem. The talk will be accessible to a general scientific audience; we will assume no prior familiarity with concepts from computer science, information theory, or quantum mechanics.

***Monday, June 26<sup>th</sup> 2023***

***4:00 PM (Tea / Coffee 03.45 PM)***

***Auditorium, TIFR-H***