Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Colloquium

Observing the buzz of the universe in long wavelength gravitational waves with galactic clocks

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Gravitational waves (GWs), a post-script of Einstein's General Theory of Relativity, is the latest messenger in astronomy. Discovered in the last decade, this window to our Universe opened up just a bit more this year. A community of radio astronomers and astrophysicists, using experiments called pulsar timing arrays (PTAs) over the last three decades, recently announced strong evidence for the long wavelength counterparts of short wave GWs, discovered just 8 years back. After a brief background of GWs, this talk will describe the concept of PTAs highlighting the role of their main component – the radio pulsar. Then, the experiments in progress worldwide, including our own Indian Pulsar Timing Array (InPTA), will be introduced and the challenges in these experiments outlined. The analysis methods to separate noise sources covariant with the GW signal will be briefly reviewed. After a look at the recent evidence for these ultra-long gravitational waves, the ongoing PTA work would be discussed outlining the road ahead in this emerging messenger.

Monday, Oct 9th 2023

4:00 PM (Tea / Coffee 3.45 PM)

Auditorium, TIFR-H