



trombay
colloquium*
October 5, 2023

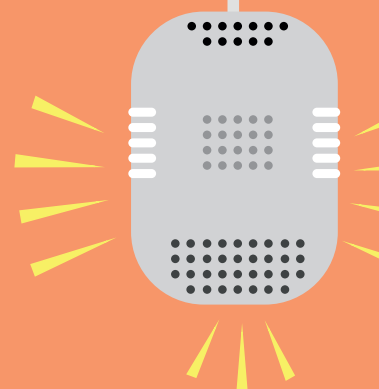
Studying Galaxy Evolution with the GMRT

Galaxies are not static, but evolve with time. One important process that takes place as galaxies evolve is the conversion of gas into stars. On a cosmic scale, it is well established that this star formation activity peaked about 10 billion years ago and that the average star formation rate of the universe has declined sharply since then. Atomic Hydrogen is the primary fuel for star formation, stars form as the gas cools to become molecular hydrogen, and then cools further and collapses under self gravity. Understanding the evolution of the atomic hydrogen content of galaxies is hence key to understand the evolution of the star formation rate with cosmic time. Unfortunately, because of the difficulties in detecting atomic hydrogen emission (via its best tracer, the 21 cm spectral line), until recently very little was known about the evolution of the gas content of star forming galaxies. I will discuss results from ongoing atomic hydrogen surveys of star forming galaxies using the upgraded Giant Metrewave Radio Telescope that have significantly added to our understanding of the evolution gas in galaxies.



Prof. Jayaram N. Chengalur

Director
Tata Institute of Fundamental Research



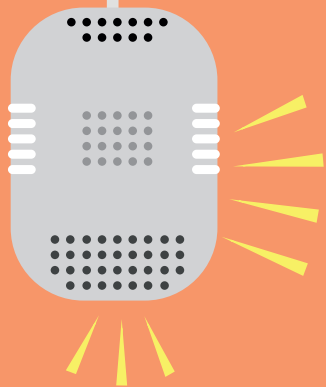
*The Trombay Colloquium is a key window of opportunity for the BARC community to brainstorm with eminent individuals belonging to a wide spectrum of science and allied domains. Prominent scientists and technologists are invited to BARC Trombay to deliver captivating talks on emerging domains of science, and the transformative effect of new technological innovations.



trombay
colloquium*
November 23, 2023

Economy, Energy, Ecology & AI *Some Thoughts*

Relatively inexpensive fossil energy is responsible for rapid progress of humanity post industrial revolution. Energy is essential for economic growth. Capitalistic economics with advancement of diverse technologies has helped improve standard of living of increasing human population, and now digital/ AI technologies are accelerating this progress. With technological progress there's consolidation of power, wealth inequality, ecological distress, biodiversity loss, etc. Human activities have perhaps altered the Earth beyond repair for humanity to continue to prosper forever. There is an optimistic view that green energy, electrification and decarbonization may mitigate impending ecological disasters. Is this triumph of hope versus practical reality? Activities that give benefits in 30, 50 years has little economic motivation, as capitalism promises everything now, amplified by on demand throw away society. Are there any alternate economic and societal paradigms?



Dr. Ajit Sapre

Group President (R&D)
Reliance Industries Ltd

*The Trombay Colloquium is a key window of opportunity for the BARC community to brainstorm with eminent individuals belonging to a wide spectrum of science and allied domains. Prominent scientists and technologists are invited to BARC Trombay to deliver captivating talks on emerging domains of science, and the transformative effect of new technological innovations.