ICTS Colloquium

Title : From chords to series: Tracing the evolution of sine function in India

Speaker: K. Ramasubramanian, Indian Institute of Technology Bombay, Maharashtra

Date : Monday, April 9, 2018

Time : 3:00 PM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract: Sine function is ubiquitous. It pervades all of physics and mathematics, starting from the description of simple harmonic oscillator to that of propagation of electromagnetic waves in various media.

The key role played by the sine function in connection with the description of certain astronomical phenomena seems to have been clearly understood by Indian astronomers and mathematicians quite early. Around the end of 5th century Aryabhata presents a recursive relation to evaluate sine function, which essentially happens to be the discrete analogue of the harmonic equation. From then on, the Indian astronomers and mathematicians have been continuously striving to get better and better approximations, which finally culminated in the discovery of infinite series around the 14th century by the Kerala astronomers.

It was rightly observed by the fields medallist David Mumford- “too many people still think that mathematics was born in Greece and more or less slumbered until the Renaissance”. To ameliorate this, the present lecture will attempt to take the audience through an interesting, challenging and yet quite rewarding journey that the Indian mathematicians seem to have taken in discovering and describing the sine function in its various *avatars*! It is also interesting to note that all these discoveries have been couched in the form of beautiful verses.