AMRITA
VISHWA VIDYAPEETHAM

**Amrita Darshanam,
International Centre for Spiritual Studies,
Amrita Vishwa Vidyapeetham**

AMRITA DARSHANAM
INTERNATIONAL CENTRE FOR SPIRITUAL STUDIES

presents

Two-day Workshop on
Glimpses of Indian Mathematics

by

Prof. K. Ramasubramanian

IIT Bombay, Mumbai

Date: 3 - 4 March 2018 (Sat - Sun)
Time: 9:30am - 5:00pm
Venue: Amrita Vishwa Vidyapeetham, Bengaluru Campus

Fee:

Students
- **Rs. 500/-** (without accommodation)
- **Rs. 1000/-** (with accommodation)

General
- **Rs. 1000/-** (without accommodation)
- **Rs. 2000/-** (with accommodation)

For details, please contact:
- **Mr. Arjun Bharadwaj**
  (j_arjun@blr.amrita.edu)
- **Dr. Suhas B. N.**
  (bn_suhas@blr.amrita.edu)

Workshop participants will be awarded a certificate.

Online registration: www.amrita.edu/ad/wgim

Mathematics in India has a very long and hallowed history. *Sulvasutras*, the oldest extant texts (prior to 800 BCE) that deal with mathematics, explicitly state and make use of the so-called Pythagorean theorem apart from giving various interesting approximations to surds. Following this, Pingala's *Chandassastra* (3rd century BCE), a text that deals with the prosody, lays foundations for various combinatorial techniques. By the time of Aryabhata (c.499 CE), the Indian mathematicians were fully conversant with most of the mathematics that we currently teach in our schools, which include the algorithms for extracting square root and cube root based on the decimal place-value system. Among other things, Aryabhata also presented the differential equation of sine function in its finite-difference form and a method for solving the linear indeterminate equation. Brahmagupta (c.628) besides discussing the arithmetic operations with zero also introduces the profound '*bhavana*' law of composition for solving quadratic indeterminate equations.

Apart from some of these important landmarks in the evolution of algebra in India, the Kerala School of astronomy and mathematics pioneered by Madhava (c.1340 - 1420) discovered the infinite series for pi (the so-called Gregory-Leibniz series) and other trigonometric functions. The series for pi/4 being an excruciatingly slowly converging series, Madhava also came up with several fast convergent approximations to it. Though Madhava's works containing these series are not extant today, by way of citations that are to be found in the later works, we come to know that it was Madhava who was responsible for the efflorescence of the galaxy of brilliant astronomers and mathematicians that the Kerala School.

It is truly remarkable that all the different branches of mathematics in India, including the sophisticated infinitesimal calculus, have been developed without much "formal" notation, and have been succinctly coded in the form of metrical compositions in Sanskrit, in a completely ingenious way. The two-day workshop, to be conducted by experts in the area, aims to provide a glimpse of the mathematical heritage of India.

Indic Academy will sponsor a limited number of participants to attend the workshop. Interested may apply by sending their details to **mathworkshop.amrita@gmail.com** on or before **25 February 2018**.