

# From maths to astrophysics

The TIFR has six centres outside its main campus in Mumbai. This is apart from the four field stations that help in science research of a high order

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**T**he Tata Institute of Fundamental Research has six centres outside its main campus in Mumbai. They are the Centre for Applicable Mathematics, Bangalore; the Homi Bhabha Centre for Science Education, Mumbai; the International Centre for Theoretical Sciences, Bangalore; the National Centre for Biological Sciences, Bangalore; the National Centre for Radio Astrophysics, Pune; and the TIFR Centre for Interdisciplinary Sciences, Hyderabad.

We will examine the facilities available in each one of them and the opportunities offered.

● Centre for Applicable Mathematics (CAM), Bangalore: The TIFR centre in Bangalore is part of the School of Mathematics on the Mumbai campus. It works on research in applicable mathematics. The focus is on areas such as theoretical and numerical aspects of differential equations, especially in the following topics: applications of nonlinear functional analysis in the study of differential equations; control aspects of partial differential equations; hyperbolic equations; and conserva-



**FOCUS ON APPLICATION:** The building of the Tata Institute of Fundamental Research-Centre for Applicable Mathematics at Yelahanka New Town in Bangalore

space exploration, and even in finance often find solutions through applicable mathematics. The centre offers consultation at individual and institutional levels, in terms of application of mathematical theory to industry-related problems.

The centre has on the anvil new areas of thrust such as image processing and interpretation; modelling of atmospheric phenomena; mathematical finance; and mathematical issues in medicine and biology.

● Homi Bhabha Centre for Science Education (HBCSE), Mumbai: The centre has broad goals to

space exploration, and even in finance often find solutions through applicable mathematics. The centre offers consultation at individual and institutional levels, in terms of application of mathematical theory to industry-related problems.

Research areas: Research work in the centre encompasses cognitive and pedagogic studies, attitudinal studies and gender issues, educational implications of history and philosophy of science.

The science education research focuses on alternative conceptions in topics of school and college science; students' epistemologies (studies of knowl-

technology; structure and dynamics of knowledge; history and philosophy of science in science education; mathematical modelling of educational processes; and the National Initiative on Undergraduate Science.

The technology education research addresses key issues in the development of curricular elements for technology education at the school level.

The centre runs the Graduate School in Science Education which prepares students for the Ph.D. degree.

● International Centre for Theoretical Sciences (ICTS), Banga-

● National Centre for Biological Sciences (NCBS), Bangalore: This promotes fundamental research in the frontier areas of biology. The research interests at the centre range from the study of single molecules to ecology and evolution. The main areas of study are the following: biochemistry, biophysics, and bioinformatics; cellular organisation and signalling; ecology and evolution; genetics and development; neurobiology; and theory and modelling of biological systems.

The Institute for Stem Cell Biology and Regenerative Medicine (inStem) is an autonomous institute of the Department of Biotechnology of the Union government, located at and nurtured by the NCBS, Bangalore. The Centre for Cellular and Molecular Platforms (C-CAMP), another unit of the department, is also at the NCBS.

● National Centre for Radio Astrophysics (NCRA), Pune: This is a reputable centre for research in diverse areas of astronomy and astrophysics. Studies on signal processing, antenna design, and software for communication are also being carried out here. The most powerful radio-telescope in the country, the Giant Metrewave Radio Telescope (GMRT) operating at low radiofrequencies, belonging to the centre is located 80 km north of Pune. Researchers at this centre get the rare opportunity to work using the singular facility, built and operated by the NCRA. It has also built the Ooty Radio Telescope (ORT), located at Udhagamandalam.

● TIFR Centre for Interdisciplinary Sciences (TCIS), Hyderabad: This newly established centre will conduct graduate programmes in