



Advanced Training in Mathematics Schools

Supported by *National Board for Higher Mathematics*

Advanced Instructional School in Group Theory

Venue: *IIT Bombay, Powai, Mumbai*

10 May - 29 May, 2010

Conveners: *I. B. S. Passi and J. K. Verma*

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A Brief Description of ATM Schools

Advanced Training in Mathematics (ATM) Schools are a joint effort of a large number of mathematicians in the country for training mathematics research scholars and teachers with generous support from the National Board for Higher Mathematics. The programmes are conducted in reputed mathematics departments in Summer and Winter each year. In these Schools, the emphasis is on problems solving and on understanding interrelations of basic subjects in mathematics. At the initial stage, ATM Schools consist of two Annual Foundation Schools (AFS I & II) in algebra, analysis, and topology. At a later stage, Advanced Instructional Schools (AIS) and workshops (ATMW) in all major areas are organised. Several advanced instructional schools (ATML) are organized each year exclusively for young lecturers in colleges and universities

Advanced Instructional School in Group Theory

The following topics are planned to be covered:

Combinatorial Group Theory: Free groups. Generators and relations. Factor groups and subgroups. Nielsen transformations. Free products and free products with amalgamations. HNN extensions. Bass-Serre Theory. Commutator calculus.

Geometric Group Theory: Cayley graphs of finitely generated groups. Hyperbolic metric spaces. Area and isoperimetric inequalities. The Gromov boundary of a δ -hyperbolic space. $CAT(\kappa)$ spaces. Isometries of $CAT(0)$ spaces. The flat torus theorem. Hyperbolic groups. Growth of groups.

Resource persons

R Mikhailov	A Naolekar	IBS Passi
UK Anandavardhanan	P Sankaran	BSury
NSN Sastry	MS Raghunathan	S Gadgil
AR Shastri	SK Roushan	S Deo
TN Vekataraman	S Garge	R Shukla
A Kulshreshtha	AK Singh	

Eligibility for Participation

The school will admit 30 students in their first and second years of Ph.D. programme, and a few young university lecturers and college teachers. Students who have attended AFS-I/II before will be given preference to attend this school.

Financial Support

Selected participants will be paid III-AC return train fare from their place of work/home town to the venue by shortest route and provided with accommodation and local hospitality.

How to Apply

The syllabus, application form and other information about the programme is available on the website:

<http://www.bprim.org/atm>

Applications may also be made on plain paper, giving the following information: Name, Date of Birth, Age, Gender, Institute/Department, Areas of interest, Address for correspondence, email address, City, State, Pincode, Academic Record: B.Sc./M.Sc. with names of the Institutes. These should be attested by Head/Principal of the institute.

Completed application forms should reach

Prof. J. K. Verma

Dept. of Mathematics

IITBombay, Powai Mumbai-400076

Phone: 25767478(Office), 25767451(Maths Office)

by **Saturday, 20th Feb., 2010**. List of selected candidates will be posted on the website of ATM Schools on **Saturday, 27th Feb., 2010**.

NBHM Committee for the ATM Programme

Prof. S. A. Katre	Pune U., Pune
Prof. S. Kesavan	IMSc, Chennai
Prof. Shobha Madan	IIT Kanpur
Prof. N. Nitsure	TIFR, Mumbai
Prof. J. K. Verma (<i>Convener</i>)	IIT Bombay