



National Centre for Mathematics

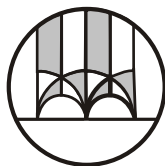
www.ncmath.org

(A joint centre of TIFR and IIT Bombay)

Advanced Training in Mathematics Schools

www.atmschools.org

(Supported by National Board for Higher Mathematics)



Online Instructional School for Teachers (IST) on "Geometry of Complex Functions"

at Dept. of Mathematics, Indira Gandhi National Tribal University, Amarkantak (MP)

14th July 2021 to 08th August 2021

The Instructional School for Teachers (IST) is an Advanced Training in Mathematics (ATM) School under the National Centre for Mathematics, Mumbai. The purpose of this program is to nourish the university teachers with artistic presentation skills of mathematical concepts in core subject complex analysis. This course will help to learn advanced mathematics in an enjoyable way. The main focus will be on better geometrical understanding of the fundamental concepts in complex analysis. The resource persons are well established faculty members in renowned institutes, all well versed with teaching skills.

Organizers

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Speakers and Syllabus

Dr. Sourav Pal, IIT Bombay

Definition and Geometric Interpretation of Complex Numbers, Topology of the Complex Plane, Definition and Geometric Representation of Complex Functions, Power Functions z^n and $z^{(1/m)}$, Elementary Functions: Exponential Function, Logarithmic Functions, Branch cut and branch points, Complex Exponents, Trigonometric and Hyperbolic Functions, Inverse Trigonometric and Hyperbolic Functions.

Dr. Ved Datar, IISc Bangalore

Limits and Continuity of $f: \mathbb{C} \rightarrow \mathbb{C}$ and comparison with $f: \mathbb{R}^2 \rightarrow \mathbb{R}^2$, Reciprocal Transformations $1/z$, Riemann Sphere, Stereographic Projection, Differentiability, Cauchy-Riemann Equations, Analytic Functions, Entire Functions, Harmonic Functions, Analyticity of Complex and Real Functions.

Dr. Vamsi Pritham Pingali, IISc Bangalore

Definition, Properties and Geometric Interpretation of Conformal Mapping, Mobius Transformation, Fixed Point, Automorphisms of the Disc, Reflection Principle, Open Mapping Theorem, Schwarz Lemma.

Dr. Sushil Gorai, IISER Kolkata

Curves in the Complex Plane, Contours, Line Integrals, Cauchy's Theorem, Contour Integrals, Winding Number, Homotopy version of Cauchy's Theorem, Multiply Connected Domains, Cauchy Integral Formula.

Dr. Swadesh Kumar Sahoo, IIT Indore

Cauchy's Inequality and Applications, Liouville's Theorem, Maximum Modulus Principle, Power Series, Radius of Convergence, Taylor and Laurent Series, Singularities and its Classification.

Dr. Vasudeva Rao Allu, IIT Bhubaneswar

Zeros, Poles, Meromorphic Functions, Cauchy Residue Theorem, Evaluation of Real Trigonometric Integrals and Improper Integrals, Integration along a Branch cut.

Email address to which soft copies of the applications can be sent: suman@igntu.ac.in

The web page for program details and the online registration:

<https://www.atmschools.org/school/2021/IST/gcf>

Last date for submission of the online registrations by the applicants : 30th June 2021