IIT GUWAHATI MATHEMATICS SEMINAR SERIES presents

a talk by

Prof. KAUSHAL VERMA, Indian Institute of Science, Bangalore

as part of Cauchy Day celebration.

Title of the Talk: Quadrature Domains in the Plane

First, it is necessary to study the facts, to multiply the number of observations, and then later to search for formulas that connect them so as thus to discern the particular laws governing a certain class of phenomena.

– Augustin Louis Cauchy

$$\oint_C f(z)\,dz = 2\pi i \sum_j R_j$$

$\sum_j R_j$ is the sum of the residues of the function f(z) at its poles within C.

Augustin-Louis Cauchy **(21 August 1789 – 23 May 1857) was a French mathematician and physicist who pioneered the study of analysis, both real and complex, and the theory of permutation groups. He also researched in convergence and divergence of infinite series, differential equations, determinants, probability and mathematical physics. He was one of the first to state and prove theorems of calculus rigorously, rejecting the heuristic principle of the generality of algebra of earlier authors. He almost singlehandedly founded complex analysis and the study of permutation groups in abstract algebra. A profound mathematician, Cauchy had a great influence over his contemporaries and successors. His writings range widely in mathematics and mathematical physics.**

"More concepts and theorems have been named for Cauchy than for any other mathematician (in elasticity alone there are sixteen concepts and theorems named for Cauchy)." He wrote approximately eight hundred research articles and five complete textbooks.

Honours awarded to Augustin-Louis Cauchy

1. Fellow of the Royal Society (1832)
2. Fellow of the Royal Society of Edinburgh (1845)
3. Lunar features (Crater Cauchy and Rupes Cauchy)
4. Paris street names (Rue Cauchy (15th Arrondissement)
5. Commemorated on the Eiffel Tower
6. Popular biographies list (Number 45)

Prof. Kaushal Verma obtained his Ph. D from Indiana University, Bloomington. He is known for his work in dynamical systems and ergodic theory, several complex variables and analytic spaces etc. He won the prestigious Shanti Swaroop Bhatnagar award in 2014.

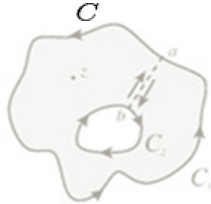
Cauchy-Riemann Equation

$$f(z) \text{ is holomorphic} \Leftrightarrow \frac{\partial f}{\partial x} = \frac{\partial f}{i\partial y}$$

$$\Updownarrow$$

$$\frac{\partial f}{\partial \bar{z}} = \frac{1}{2}\left(\frac{\partial f}{\partial x} + i\frac{\partial f}{\partial y}\right) = \frac{1}{2}\left(-i\frac{\partial f}{\partial y} + i\frac{\partial f}{\partial y}\right) = 0$$

$$\frac{1}{2\pi i}\int_C \frac{f(z)}{z - z_0}\,dz = f(z_0).$$



Venue: Lecture Hall - 4

Date: 21st August 2017

Time: 4:30 PM