

# Department of Mathematics

## Indian Institute of Technology Bombay



## Dr. P.V. Sukhatme Memorial Award Function



The Department of Mathematics organizes the “Dr. P.V. Sukhatme Memorial Award Lecture” every academic year since 2010. The lecture will be followed by the conferring of “Dr. P. V. Sukhatme Memorial Awards” that are given to the top two students in the M.Sc. (Mathematics) as well as M.Sc. (Applied Statistics and informatics) programmes of the Department of Mathematics.

All interested are cordially invited.

Dr. P.V. Sukhatme Memorial Lecture:

**Prof. Rajendra Bhatia**

Theoretical Statistics and Mathematics Unit  
Indian Statistical Institute, Delhi



Invited Lecture:

**Prof. Probal Chaudhuri**

Theoretical Statistics and Mathematics Unit  
Indian Statistical Institute, Kolkata



Date : Tuesday, February 10, 2015

Time : 15:00-17:00

Venue: Ramanujan Hall, Dept. of Mathematics

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Speaker: Prof. Rajendra Bhatia

Title: Loewner Matrices

Time: 3 pm

Abstract:

Let  $f$  be a smooth function on  $\mathbb{R}$ . The divided difference matrices whose  $(i, j)$  entries are  $\left[ \frac{f(\lambda_i) - f(\lambda_j)}{\lambda_i - \lambda_j} \right]$   $\lambda_1, \dots, \lambda_n \in \mathbb{R}$  are called Loewner matrices. In a seminal paper published in 1934 Loewner used properties of these matrices to characterise operator monotone functions. In the same paper he established connections between this matrix problem, complex analytic functions, and harmonic analysis. These elegant connections sent Loewner matrices into the background. Some recent work has brought them back into focus. In particular, characterisation of operator convex functions in terms of Loewner matrices has been obtained. In this talk we describe some of this work.

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Speaker: Prof. Probal Chaudhuri

Title: Shape of the Earth, Motion of Planets and the Method of Least Squares

Time: 4.15 pm

Abstract:

In the 18th century, while dealing with astronomical and geodesic measurements, the scientists were confronted with a statistical problem, which in those days was described as "the problem of combining inconsistent equations". People who worked on this problem and contributed towards its solutions include Euler, Laplace, Gauss and Legendre among many others. I shall discuss the history of the problem and how it eventually led to the invention of the method of least squares.

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