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ראש המרכז ללימודים מתקדמים במתמטיקה
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**The Department of Mathematics and the Center for Advanced Studies in Mathematics
announce a special meeting to mark the
2013 award of the Noriko Sakurai fellowship
Tuesday, December 25, 2012, at 12:00
at the Deichman building for Mathematics (58), Seminar room -101**

Program:

12:00 Gathering, light refreshments

12:30 **Opening remarks:**

Prof. Miriam Cohen, Director of the Center of Advanced Studies in Mathematics

Prof. Ronen Peretz, Chair, Department of Mathematics

Prof. Daniel Sternheimer, Rikkyo (Japan) and Bourgogne (France) Universities

12:40 **Lecture:**

Dr. Saurabh Ray, 2013 recipient of the Noriko Sakurai fellowship

Title: An Extension of Colorful Carathéodory Theorem

Abstract: The colorful Carathéodory theorem states that given $d + 1$ sets of points in \mathbb{R}^d , the convex hull of each containing the origin, there exists a simplex (called a "rainbow simplex") with at most one point from each point set, which also contains the origin. Equivalently, either there is a hyperplane separating one of these $d + 1$ sets of points from the origin, or there exists a rainbow simplex containing the origin.

We will prove the following extension of the colorful Carathéodory theorem: given $\lfloor d/2 \rfloor + 1$ sets of points in \mathbb{R}^d , and a convex object C , either one of the sets can be separated from C by a constant (depending only on d) number of hyperplanes, or there is a $\lfloor d/2 \rfloor$ dimensional rainbow simplex intersecting C .

13:10 **Honorary lecture:**

Prof. Noga Alon, School of Mathematical Sciences, Tel-Aviv University

Title: Random Cayley graphs

Abstract: The study of random Cayley graphs of finite groups is related to the investigation of Expanders and to problems in Combinatorial Number Theory and in Information Theory.

I will discuss this topic, describing the motivation and focusing on the question of estimating the chromatic number of a random Cayley graph of a given group with a prescribed number of generators. The investigation of this problem combines combinatorial, algebraic and probabilistic tools. Several intriguing questions that remain open will be mentioned as well.