INSTITUTUL DE MATEMATICA "SIMION STOILOW" AL ACADEMIEI ROMANE

**Seminarul de Teoria Potentialului**

# *Extremizers for the 2D Kakeya problem*

# Victor D. Lie
(Purdue Univ. and IMAR)

**Abstract:** Our talk investigates the subtle relationship between the size of the level sets of the (bilinear) Kakeya function and the corresponding geometric distribution of the points within these level sets. Under suitable conditions, our goal is to characterize the situation in which the size of these level sets is maximal and thus to provide qualitative and quantitative information about the extremizers associated with the (bilinear) Kakeya function. Our analysis will involve additive combinatorics (e.g. Plünnecke sum-set estimate) and incidence geometry (e.g. Szemeredi-Trotter) techniques and relates with a class of problems including Bourgain's sum-product theorem and Katz-Tao ring conjecture. This is a joint work with Michael Bateman.

**Marți 28 martie 2017, ora 14:00,** amfiteatrul "Miron Nicolescu", **parter**