TURÁN EMLÉKELOADÁSOK

a Rényi Intézetben

A 2006. évi Turán Emlékeloadásokat
a Bolyai János Matematikai Társulat rendezésében

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Az eloadássorozat címe:
*From Arithmetic Progressions to Nilmanifolds:
A Chapter in Ergodic Theory*

1. November 21-én, kedden 16 órakor:
   *Number Theory, Combinatorics and Recurrence in Dynamical Systems;
   the Correspondence Principle*

2. November 22-én, szerdán 16 órakor:
   *Ergodicity, Mixing, Conventional and non-Conventional Ergodic
   Theorems*

3. November 23-án, csütörtökön 16 órakor:
   *The Long Term Memory of Dynamical Systems and the Strange Role
   of Nilpotent Groups and Nilflows*

Az eloadások helye az Intézet Nagyterme.

1. Here we present the historical background that has led to the interplay of ergodic theory with Ramsey theory. On the combinatorial side the "Erdos-Turán" conjecture was crucial, and by way of a certain "correspondence principle" the notion of "recurrence", familiar in dynamical phenomena, can be brought to play.

2. The ergodic theoretic approach to Ramsey-theoretic questions has the advantage that it allows for very general structure theorems available for measure preserving dynamical systems to enter the picture. The fact that both systems exhibiting a great deal of randomness as well as systems exhibiting some generalized periodicity display recurrence phenomena enables one to deduce these in great generality.

3. The ergodic theoretic analysis shows that quite surprisingly, the obstruction to randomness that is relevant to our goal always has an algebraic source. Another way of putting this is that any correlation between the past, the present and long range future is due to underlying "group-related" behavior. The groups that enter here turn out to be nilpotent. We will try to explain this and give the application to Ramsey theory. In all of this the work of Bergelson, Kra, and Host plays a