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THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE  
Geometric Functional Analysis and Probability Seminar

Room 261 ,Ziskind Building  
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Symmetric Birkhoff sums in infinite ergodic theory

Abstract:

By a Theorem of Aaronson, normalized Birkhoff sums of positive integrable functions in infinite, ergodic systems either tend to 0 almost surely or there is a subsequence along which every further subsequence tends to infinity. This is not true for normalized symmetric Birkhoff sums where the summation is along a symmetric time interval as there are examples of infinite, ergodic systems for which the absolutely normalized symmetric Birkhoff sums of positive integrable functions may be almost surely bounded away from zero and infinity. In this talk I will start by explaining a variety of transformations (of different nature) satisfying this phenomena, discuss the case main result that the absolutely normalized, symmetric Birkhoff sums of positive integrable functions in infinite, ergodic systems never converge point-wise and there even exists a universal divergence statement. Time permits I will show some examples of actions of other groups which converge and some recent (yet unwritten) results on actions by commuting skew products which are related to self intersection local times.

The contents of this talk are a combination of 3 papers, one of which is a joint work with Benjamin Weiss and Jon Aaronson and another one is work in progress with Jon Aaronson.