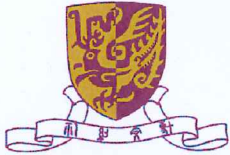


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# Colloquium

## *Nonconventional Arrays and an Extension of the Szemerédi Theorem*

**Professor Yuri KIFER**  
Hebrew University of Jerusalem

### **Abstract**

The study of nonconventional sums  $S_N = \sum_{n=1}^N F(X(n), X(2n), \dots, X(\ell N))$ , where  $X(n) = g \circ T^n$  for a measure preserving transformation  $T$ , has a 40 years history after Furstenberg showed that they are related to the ergodic theory proof of Szemerédi's theorem about arithmetic progressions in sets of integers of positive density. Recently, it turned out that various limit theorems of probability theory can be successfully studied for sums  $S_N$  when  $X(n)$ ,  $n = 1, 2, \dots$  are weakly dependent random variables. I will talk about a more general situation of nonconventional arrays of the form  $S_N = \sum_{n=1}^N F(X(p_1 n + q_1 N), X(p_2 n + q_2 N), \dots, X(p_\ell n + q_\ell N))$  and how this is related to an extended version of Szemerédi's theorem.

Date: 3 July 2017 (Monday)  
Time: 10:30am ~ 11:30am  
Venue: Room 222, Lady Shaw Building,  
The Chinese University of Hong Kong, Shatin

*All are Welcome*