



THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Foundations of Computer Science Seminar

Room 155 ,Ziskind Building  
on Monday, May 27, 2019  
at 14:30

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Distributed Property Testing -- Progress and Challenges

Abstract:

In this talk I will describe some recent work on distributed property testing in the networks with bounded bandwidth (the CONGEST model): we have a network of computing nodes communicating over some initially-unknown network graph, where every communication link can carry a bounded number of bits per round. Some simple-looking problems, such as checking if the network contains a 4-cycle, are known to be very hard in this model, and this motivates us to consider property testing instead of exact solutions.

I will describe distributed property testing algorithms for two problems: subgraph-freeness, where we wish to determine whether the network graph contains some fixed constant-sized subgraph  $H$ ; and uniformity testing, where every node of the network draws samples from an unknown distribution, and our goal is to determine whether the distribution is uniform or far from uniform. I will also discuss lower bounds.