

## **LMS Computer Science Colloquium – speakers, titles and abstracts**

**Christian Konrad (University of Bristol)**

***Streaming Algorithms, Communication Complexity, and the Maximum Matching Problem***

This talk explores the connections between Streaming Algorithms and Communication Complexity, using the Maximum Matching problem as a key example.

Streaming algorithms for graph problems process sequences of edge insertions and deletions that make up a graph while using a memory that is much smaller than the graph itself. Communication Complexity examines the number of bits that multiple parties must exchange to solve a given problem. These two fields are closely linked, as lower bounds in communication complexity imply lower bounds on the space requirements of streaming algorithms. In this talk, we will delve into this connection through the lens of the Maximum Matching problem, tracing how this relationship has been leveraged from the earliest works on streaming algorithms for matchings in 2004 to the present.

**Peter Kiss (University of Warwick)**

***The Distributed Lovász Local Lemma***

The Lovász Local Lemma (LLL) is a fundamental result in probability theory, used to prove the existence of mathematical objects via the probabilistic method, with applications in many areas including routing and scheduling, hash functions, and integer programming. Relatively recently, the LLL has also been shown to have a central role in the complexity theory of distributed algorithms, in which problems must be solved collaboratively by processors represented as nodes in a communication graph. Distributed algorithms for the constructive LLL can act as meta-algorithms to solve a range of other distributed graph problems.

In this talk, we will survey the background of the distributed LLL, and discuss some recent advances in distributed LLL algorithms and their implications.