

When: April 20, 14:00 hrs.

Speaker: Tobias Mömke, U. Ausburg, Germany

Title: A PTAS for Unsplittable Flow on a Path.

Abstract: In the Unsplittable Flow on a Path problem (UFP) we are given a path with edge capacities, and a set of tasks where each task is characterized by a subpath, a demand, and a weight. The goal is to select a subset of tasks of maximum total weight such that the total demand of the selected tasks using each edge e is at most the capacity of e . The problem admits a QPTAS [Bansal, Chakrabarti, Epstein, Schieber, STOC'06; Batra, Garg, Kumar, Mömke, Wiese, SODA'15]. After a long sequence of improvements [Bansal, Friggstad, Khandekar, Salavatipour, SODA'09; Bonsma, Schulz, Wiese, FOCS'11; Anagnostopoulos, Grandoni, Leonardi, Wiese, SODA'14; Grandoni, Mömke, Wiese, Zhou, STOC'18], the best known polynomial time approximation algorithm for UFP has an approximation ratio of $1 + 1/(e+1) + \epsilon < 1.269$ [Grandoni, Mömke, Wiese, SODA'22]. It has been an open question whether this problem admits a PTAS. In this paper, we solve this open question and present a polynomial time $(1 + \epsilon)$ -approximation algorithm for UFP.

Where: Sala de Seminario Von Neumann, CMM, Beauchef 851, torre norte.

When: April 20, 15:00 hrs.

Speaker: Dieter Mitsche, PUC

Title: Percolation on dense random graphs with given degrees.

Abstract: We study the order of the largest connected component of a random graph having two sources of randomness: first, the graph is chosen randomly from all graphs with a given degree sequence, and then bond percolation is applied. Far from being able to classify all such degree sequences, we exhibit several new threshold phenomena for the order of the largest component in terms of both sources of randomness. We also provide an example of a degree sequence, for which the order of the largest component undergoes an unbounded number of jumps in terms of the percolation parameter, giving rise to a behavior that cannot be observed without percolation.

Joint work with Lyuben Lichev and Guillem Perarnau.

Where: Sala de Seminario Von Neumann, CMM, Beauchef 851, Torre Norte.