

Department of Mathematics, BGU

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## Combinatorics Seminar

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*On Tuesday, December ,4 2018*

*At 15:30 – 17:00*

*In 201*

Arnold Filtser (BGU)

will talk about

### **Steiner Point Removal with distortion $O(\log k)$ , using the Relaxed Voronoi algorithm**

Abstract: In the Steiner Point Removal (SPR) problem, we are given a weighted graph  $G=(V,E)$  and a set of terminals  $K\subseteq V$  of size  $k$ . The objective is to find a minor  $M$  of  $G$  with only the terminals as its vertex set, such that distances between the terminals will be preserved up to a small multiplicative distortion. Kamma, Krauthgamer and Nguyen [SICOMP2015] devised a ball-growing algorithm with exponential distributions to show that the distortion is at most  $O(\log^5 k)$ . Cheung [SODA2018] improved the analysis of the same algorithm, bounding the distortion by  $O(\log^2 k)$ . We devise a novel and simpler algorithm (called the Relaxed Voronoi algorithm) which incurs distortion  $O(\log k)$ . This algorithm can be implemented in almost linear time ( $O(|E|\log |V|)$ ).

**Please Note the Unusual Time and Place!**