

---

**ARVIND AYYER**, Indian Institute of Science

*Toppable permutations and excedances*

Recall that an excedance of a permutation  $\pi$  is any position  $i$  such that  $\pi_i > i$ . Inspired by the work of Hopkins, McConville and Propp (Elec. J. Comb., 2017) on sorting using toppling, we say that a permutation is toppleable if it gets sorted by a certain sequence of toppling moves. We will show that the number of toppleable permutations on  $n$  letters is the same as the number of permutations on  $n$  letters for which excedances happen exactly at  $\{1, \dots, \lfloor (n-1)/2 \rfloor\}$ . Time permitting, we will show bijectively that this is also the number of acyclic orientations with unique sink of the complete bipartite graph  $K_{\lceil n/2 \rceil, \lfloor n/2 \rfloor + 1}$ .

This is joint work with D. Hathcock and P. Tetali (arXiv:2010.11236).