

## *Fractional coloring $d$ -degenerate hypergraphs*

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**Zoom meeting ID: 871 3130 0307 Password: 030994**

**Abstract:** In recent work, Martinsson and Steiner showed that every  $K_3$ -free  $d$ -degenerate graph  $G$  has fractional chromatic number  $\chi_f(G) = O(d/\log d)$ . In this work we extend the result to hypergraphs of girth at least 4, employing an approach rooted in the analysis of the entropy of certain probability distributions. Our argument provides a template to tackle other problems, so it is of independent interest. We show that  $r$ -uniform  $d$ -degenerate hypergraphs of girth at least 4 have fractional chromatic number at most  $c_r(d/\log d)^{1/(r-1)}$  for some  $c_r > 0$ . As a corollary, we improve the best-known bound on the independence number of uncrowded hypergraphs for  $r \geq 5$ .