

# **LOCAL WALKS ON TREES AND EVALUATING NON-PARTISAN TRADEOFFS IN REDISTRICTING**

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Tools from discrete sampling and optimization have become increasingly important for analyzing graph-based formulations of political redistricting, requiring both operationalizing legislative text and exploring complex Pareto frontiers. In this talk I will discuss recent applications and extensions of these techniques, including for court cases and line-drawing support, evaluating nonpartisan justifications for proposed plans, and balancing multiple population constraints to address within-cycle vote dilution. Along the way I will present related open problems and some proposals based on the cycle basis walk.