

1154-62-2795 **Annika King*** (jarvsi@math.byu.edu), 302 TMCB, Department of Mathematics, Briigham
Yung University, Provo, UT 84602, and **Cristina Lange** and **Tyler J Jarvis**. *Using
Markov-Chain Monte Carlo methods to study gerrymandering in Utah.*

We present a mathematical analysis of Utah's 2012 political redistricting, using Markov-chain Monte Carlo methods to construct a large ensemble of alternative district plans that satisfy the legal requirements of contiguous districts with equal population. We compare the legislature's adopted plan in terms of many different measures for redistricting fairness, including partisan bias, mean-median score, efficiency gap, and the percentage of Republican vs Democartic voters in each district. We use precinct-level election results from the 2010 United States Senate election to estimate the distribution of voters' political parties, and we use the GerryChain library written by the Metric Geometry and Gerrymandering Group to construct the ensemble. (Received September 18, 2019)