1145-70-1491   **Sawyer Jack Robertson***, sawyerjack@ou.edu. *Kantorovich Duality and Optimal Transport Problems on Magnetic Graphs.*

Working first in the setting of finite combinatorial graphs, we explore Lipschitz function spaces, and give constructive results concerning norm-preserving extensions from certain subgraphs, as well as the identification of convex extreme points in the unit ball. We then move over to so-called magnetic graphs, which are equipped with a discrete analogue of a magnetic vector potential known as a signature. In this setting, we establish a Kantorovich-type duality result for 'signed' Lipschitz spaces, as well as the identification of the convex extreme points of the unit ball in this space. Finally, we apply this theory with the help of magnetic lift graphs to give some semi-constructive results concerning 'magnetic' optimal transport problems formulated on these graphs. (Received September 22, 2018)