



Department of  
Mathematical Sciences

# Master's Thesis Defense

**Mr. Jan Kretschmann**

**MS Graduate Student**

**Under the Supervision of Dr. Jeb Willenbring**

**Thursday,  
Apr. 23, 2020  
at 3:00 pm**

*Online via  
Blackboard Collaborate*



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## **Earth Mover's Distance Between Grade Distribution Data with Fixed Mean**

The Earth Mover's Distance (EMD) is examined on all theoretically possible grade distributions with the same grade point average (GPA). The numbers of distributions with the same EMD and GPA are encoded in the coefficients of a generating function. The theoretical mean EMD for grade distributions, that are sampled uniformly and independently at random, is computed from this function, and compared to real world grade data taken from several years. The data is further examined regarding the appearance of clusters that change when varying the distance threshold.

### **Committee Members:**

Prof. Jeb Willenbring (Advisor); Allen Bell, Rebecca Bourn, David Spade & Yi Ming Zou



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