

DEPARTMENT OF MATHEMATICS AND STATISTICS
MISSISSIPPI STATE UNIVERSITY

COLLOQUIUM

L_p -stability of persistence of Lipschitz functions

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Allen 14

Abstract. I will discuss two stability results for Lipschitz functions on triangulable, compact metric spaces. The first result is formulated in terms of the Wasserstein distance between the persistence diagrams of two functions. It shows that two Lipschitz functions whose difference is small in the sup-norm are, in a certain way, topologically similar. The second result is formulated in terms of the total persistences of functions and shows that a certain measure of topological complexity of a Lipschitz function is stable under small (in the sup-norm) perturbations. This work was motivated by biological questions of gene regulations, and I will describe the application of the two results to the problems of measuring similarity between gene expression patterns in the development of arabidopsis and assessing periodicity of gene expression time-series in the development of mouse embryos.

Dr. Mileyko is a candidate for a position in our department. There will be a reception for him in Allen 467 at 4:30 pm following his talk.