McMicken College of Arts & Sciences
Department of Mathematical Sciences

Candidates Colloquium

Fiona Knoll
Clemson University

Thursday, February 9, 2017
4 – 5 pm
Room 240 WCharlton Hall

Precise Dimensions That Guarantee a Transformation That Preserves the Euclidean Distance

Johnson and Lindenstrauss (1984) proved that any finite set of data in a high dimensional space can be projected into a low dimensional space with the Euclidean metric information of the set being preserved within any desired accuracy, provided the projected dimension lies above a certain threshold. Kane and Nelson (2013) proved such a projection does not exist if the projected dimension lies below another threshold.

In this presentation, we will discuss code-based constructions, precise bounds of the projected dimension of JL transformations, and the role of concentration of measure on these bounds. We will also discuss several modern applications. In particular, we will ponder whether a terabyte of information can be condensed into a kilobyte of information while preserving the Euclidean norm.

Refreshments will be served at 3 – 3:35 pm
in the Faculty & Graduate Student Lounge
Room 4118 French Hall West

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