THE UNIVERSITY OF CHICAGO

Departments of Computer Science, Mathematics, and Statistics

SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

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A Cheeger-Type Inequality on Simplicial Complexes

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ABSTRACT

In this paper, we consider a variation on Cheeger numbers related to the coboundary expanders recently defined by Dotterer and Kahle. A Cheeger-type inequality is proved, which is similar to a result on graphs due to Fan Chung. This inequality is then used to study the relationship between coboundary expanders on simplicial complexes and their corresponding eigenvalues, complementing and extending results found by Gundert and Wagner. In particular, we find that coboundary expanders cannot satisfy Buser or Cheeger inequalities.