

Analogues of Bermond-Bollobás Conjecture for Cages Yield Expander Families

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Abstract

Cages and expander graphs are two distinct classes of graphs, and they have been studied in various branches of mathematics and theoretical computer science. While they serve different purposes and have distinct properties, both have garnered significant attention due to their interesting and important characteristics. In this talk, we will present three related versions of the Bermond and Bollobás conjectures for cages; with the first one being the exact analogue of the original Bermond and Bollobás conjecture for the Degree/Diameter Problem. In 1981, Bermond and Bollobás raised the following question: *Is it true that for each integer $c > 0$ there exists $k > 2$ and $d \geq 2$ such that the order of the largest graph of maximum degree k and diameter d is at most $M_d(k, d) - c$?* We show that a positive answer to any of the three versions of the Bermond and Bollobás conjectures for cages would yield expander graphs (expander families).