

Linear cycles of given lengths in linear hypergraphs

Tao Jiang (Miami University)

Time: Thursday, Sep 24th, 10:00 - 11:00

Zoom meeting ID: 675 032 69186 **Password:** 061801

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Abstract: A well-known result of Verstraete states that for each integer $k \geq 2$ every graph G with average degree at least $8k$ contains cycles of k consecutive even lengths, the shortest of which is at most twice the radius of G .

In this talk, we extend Verstraete's result for linear cycles in linear r -uniform hypergraphs, where $r \geq 3$. We show that for each $k \geq 2$, there exist constants c_1, c_2 depending only on r such that every linear r -graph with average degree at least $c_1 k$ contains linear cycles of k consecutive even lengths and every linear r -graph with average degree at $c_2 k$ contains linear cycles of k consecutive lengths. For the even consecutive lengths case, our bound on the shortest cycle length among the cycles obtained is tight, which also yields improved upper bound on the linear Turan number of an even cycle of given length. For the consecutive lengths case, our bound on the shortest cycle length is tight within a constant factor.

The talk will focus on the tools used in establishing the results. We think that these tools can find further applications to other extremal problems on cycles in the hypergraph setting.



About the speaker: Tao Jiang is a professor at Miami University. He got his Ph.D. at University of Illinois, Urbana-Champaign in 2000, under the supervision of Douglas West. Jiang's research interests are mainly in graph theory and extremal combinatorics. He has solved many open problems that are related to Turan number and hypergraphs.