1084-05-208 **Zoltan Furedi**, University of Illinois, Urbana, IL 61801, and **Tao Jiang*** (jiangt@muohio.edu), Miami University, Oxford, OH 45056. *Hypergraph Turan numbers of loose cycles and linear cycles.*

Given a positive integer n and a family $\mathcal{H}$ of r-graphs, the Turán number $ex_r(n, \mathcal{H})$ is the maximum number of edges in an r-graph on n vertices not containing any member of $\mathcal{H}$. An r-uniform loose cycle of length k consists of a cyclic list of r-sets $A_1, \ldots, A_k$ such that $A_i \cap A_j \neq \emptyset$ if and only if $i = j$ or i, j are consecutive modulo k. A loose cycle is linear if consecutive sets in the list intersect in precisely one element. Let $\mathcal{C}_k^r$ denote the family of r-uniform loose cycles of length k and let L_k^r denote the r-uniform linear cycle of length k. For fixed $r, k \geq 3$, Mubayi and Verstraete conjectured that $ex_r(n, \mathcal{C}_k^r) = \ell\binom{n-1}{r-1} + O(n^{r-2})$, where $\ell = \lfloor \frac{k-1}{2} \rfloor$. They proved the conjecture for all r when $k = 3$ or 4.

We prove their conjecture for all $r \geq 4, k \geq 3$ in a stronger form, namely, for all sufficiently large n, we will determine the exact value of $ex_r(n, \mathcal{C}_k^r)$ and characterize the unique extremal construction and establish stability. For $r \geq 5$, we also obtain exact results for linear cycles (which are harder to force than loose cycles). Our main tool is the delta system method. (Received September 02, 2012)