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György Turán* (gyt@uic.edu), University of Illinois at Chicago, Dept. of Math., Stat. and Comp. Sci., Chicago, IL 60607. *On directed hypergraphs*. Preliminary report.

We consider directed 3-uniform hypergraphs with edges of the form $a, b \rightarrow c$, where a, b is the body and c is the head of the edge. An exact solution is presented for the following problem: what is the maximal number of edges in an n -vertex hypergraph without two edges $a, b \rightarrow c$ and $c, d \rightarrow e$? We also discuss a class of reachability problems for directed hypergraphs, where reachability is defined by the forward chaining procedure. The *hydra number* of an undirected graph G is the minimal number of hyperedges with bodies in $E(G)$ such that forward chaining started from any edge of G reaches all vertices. Various results are given on hydra numbers such as a characterization of trees with low hydra number, and bounds for the hydra numbers of complete binary trees. These problems are motivated by problems for Horn formulas in propositional logic.

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