1153-57-98 **Thomas Fleming*** (thomas.r.fleming@gmail.com) and **Joel Foisy**. *Intrinsic linking in directed graphs.*

A graph $G$ is called intrinsically linked if every embedding of $G$ in 3-space contains a pair of disjoint cycles that form a non-trivial link. A directed graph $G$ is intrinsically linked if a similar condition holds, with the extra restriction that the edges that make up each cycle in the link must have a consistent orientation in $G$.

Requiring a consistent orientation causes intrinsic linking in directed graphs to behave quite differently from the classical case. For example, a directed graph that is not intrinsically linked may have an intrinsically linked minor, and the usual technique of gluing intrinsically 2-linked graphs to form an intrinsically $n$-linked graph does not work.

Another example is tournaments. A tournament is a directed graph formed by choosing an orientation for each edge of a complete graph, and while $K_6$ is intrinsically linked, the smallest intrinsically linked tournament has 8 vertices.

We will discuss the construction of intrinsically $n$-linked directed graphs, analogues of the minor relation, and other results and challenges in this family of problems. (Received August 19, 2019)