1152-05-327 **James Oxley*** (oxley@math.lsu.edu), Mathematics Department, LSU, Baton Rouge, LA 70803-4918. *Structural tools for matroids and 2-polymatroids.*

For a graph G and a subset X of $E(G)$, let $r(X)$ be the number of vertices incident with some edge in X. From the pair $(E(G), r)$, which is an example of a 2-polymatroid, one can detemine G up to isolated vertices, and one can recognize matchings in G. The cycle matroid in G does not allow the determination of either of these things. Loosely speaking, a 2-polymatroid is like a matroid except that individual elements can have rank 2 instead of just 0 or 1. A representable 2-polymatroid arises from a collection of points and lines in a projective space. There are a number of natural questions for such 2-polymatroids including whether an analogue of Rota's Conjecture holds for them. However, there are few tools for deriving structural results for 2-polymatroids. This talk will introduce 2-polymatroids and will present connectivity results for these structures that resemble such matroid connectivity results as Tutte's Wheels-and-Whirls Theorem and Seymour's Splitter Theorem. These results are joint with Zachary Gershkoff or with Charles Semple and Geoff Whittle. (Received September 07, 2019)