1117-14-268 **Sonja Petrovic*** (sonja.petrovic@iit.edu), **Apostolos Thoma** and **Marius Vladoiu**.

Bouquet algebra of toric ideals.

To any toric ideal I_A, encoded by an integer matrix A, we associate a matroid structure called *the bouquet graph* of A and introduce another toric ideal called *the bouquet ideal* of A. We show how these objects capture the essential combinatorial and algebraic information about IA. Passing from the toric ideal to its bouquet ideal reveals a structure that allows us to classify several cases. For example, on the one end of the spectrum, there are ideals that we call *stable*, for which bouquets capture the complexity of various generating sets and the minimal free resolution. On the other end of the spectrum lie toric ideals whose various bases coincide. Apart from allowing for classification-type results, bouquets provide a way to construct families of examples of toric ideals with various interesting properties, e.g., robust, generic, unimodular. The new bouquet framework can be used to provide a characterization of toric ideals whose Graver basis, the universal Gröbner basis, any reduced Gröbner basis and any minimal generating set coincide. We also show that the toric ideal of a general matrix A can be encoded by that of a 0/1 matrix while preserving complexity of its bases. Along the way, we answer two open problems for toric ideals of hypergraphs. (Received January 15, 2016)