1083-13-84   **Jose Martinez-Bernal** and **Susan Morey*** (`morey@txstate.edu`), Department of Mathematics, Texas State University, 601 University Dr., San Marcos, TX 78666, and **Rafael H. Villarreal**. *Associated Primes of Powers of Edge Ideals.*

If I is an ideal of a Noetherian ring R, then Broadmann showed in 1979 that the sets of primes associated to the powers of I, that is the sets $\mathrm{Ass}(R/I^t)$, stabilize for large t. In general, it is not known where the stabilization occurs, which primes are in the stable set, or how the sets of associated primes behave prior to stabilization. Of particular interest is finding classes of ideals for which the associated primes are particularly well-behaved in that the sets of associated primes of the powers of the ideal form an ascending chain, that is, $\mathrm{Ass}(R/I^t) \subseteq \mathrm{Ass}(R/I^{t+1})$ for all t. The main result of this talk will be to show that if R is a polynomial ring and I is a square-free monomial ideal generated in degree two, that is, I is the edge ideal of a graph, then the sets of associated primes form an ascending chain. The proof uses combinatorial results and a theorem of Berge from graph theory as well as algebraic techniques. (Received August 20, 2012)

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