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Marcelo Aguiar*, Texas A&M University, Department of Mathematics, College Station, TX 77843, and **Federico Ardila** and **Swapneel Mahajan**. *The antipode problem for Hopf monoids*.

A Hopf monoid (in Joyal's category of species) is an algebraic structure akin to that of a Hopf algebra. Combinatorial structures which compose and decompose give rise to Hopf monoids. The antipode of a Hopf monoid encodes information of combinatorial interest. We will discuss the antipode problem and solve it for some concrete Hopf monoids, including those of simple graphs and of generalized permutahedra. This is joint work with Federico Ardila and Swapneel Mahajan. (Received September 03, 2012)