

Meeting: 1001, Evanston, Illinois, SS 24A, Special Session on Hopf Algebras at the Crossroads of Algebra, Category Theory, and Topology

1001-16-274 **Robert L. Grossman** and **Richard G. Larson*** (rgl@uic.edu), MSCS m/c 249, Univ. of Illinois at Chicago, Chicago, IL 60607. *Differential Algebra Structures on Families of Trees.*

The vector space spanned by labeled rooted trees forms a Hopf algebra. Let k be a field and let R be a commutative k -algebra. Let H denote the Hopf algebra of rooted trees labeled using derivations of R . We introduce a construction which gives R a H -module algebra structure and show this induces a differential algebra structure of H acting on R . We describe how certain actions of H on R are determined by the actions of derivations E of R , and by $\nabla_E F$, where E, F are derivations of R , and ∇ is the (Koszul) connection. This work extends the notion of a R/k -bialgebra introduced by Nichols and Weisfeiler. (Received August 29, 2004)