S Dascalescu, **M C Iovanov*** (`yovanov@gmail.com`) and **C Nastasescu**. *Path algebras, path coalgebras and quantum groups constructed from quivers.*

There are two algebraic objects associated to any quiver Q: the quiver algebra K[Q], and the quiver coalgebra KQ. A natural question is: what are the connections between the two, and what kind of bialgebra structures can be found on a quiver (co)algebra. We show that the path coalgebra can be obtained from the quiver algebra as a certain type of graded finite dual; also, it is the classical finite dual of the quiver algebra (i.e. the coalgebra of representative functions) if and only if the quiver is acyclic and only finitely many arrows exist between any two vertices. We also give some results about recovering the quiver algebra from the path coalgebra and a few similar results for incidence (co)algebras of partially ordered sets, and some applications. Finally, we present a few results regarding Hopf algebra structures on quivers, and on monomial algebras or coalgebras (i.e. coagebras which embed in quiver coalgebras and which have a basis of paths). We classify such Hopf algebras which are monomial, and which are compact in a certain sense (i.e. which generalize algebras of representative functions on compact groups). These give rise to new classes of quantum groups, including, in particular, certain objects important in homological algebra and representation theory. (Received December 13, 2011)