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**Sorin Dascalescu**, Str Academiei 14, Sect 1, 010014 Bucharest, Romania, **Miodrag C Iovanov\*** (yovanov@gmail.com), Str. Academiei 14, Sect 1, 010014 Bucharest, Romania, and **Constantin Nastasescu**, Str. Academiei 14, Sect 1, 010014 Bucharest, Romania. *Quantum groups with nonzero integral arising from path and incidence (co)algebras.*

A problem of interest in the theory of Hopf algebras is obtaining new quantum groups by defining Hopf algebra structures on path algebras and coalgebras. Similarly, as another class of combinatorial objects, Hopf algebra structures on incidence (co)algebras of PO-sets are also of interest. We look at a very important class of Hopf algebras, those which have a nonzero integral, which generalize the algebras of functions on compact groups. These are precisely those Hopf algebras which have a representation theoretic property that their categories of co-representations are Frobenius. We work more generally and classify those (co)algebras with this Frobenius property, which embed in quiver coalgebras (pointed) and have a basis of paths. We then classify all Hopf algebra structures arising this way; they prove to have connections to homological algebra and category theory. Using this, we also classify Hopf algebras which are quotient of quiver algebras by monomial ideals. On the other hand, we also give a unifying approach for various finiteness and combinatorial properties for subcoalgebras of path coalgebras, quotients of path algebras and incidence (co)algebras, and give the general connections between these. (Received December 14, 2010)