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*Quantum groups associated to a pair of preregular forms.* Preliminary report.

In this talk, we study universal quantum groups that simultaneously coact on a pair of  $N$ -Koszul Artin-Schelter regular algebras. This work leads to a recovery of many well-known examples of quantum groups defined by various authors in the literature. Moreover, we show that these quantum groups have surprisingly nice presentations in terms of the twisted superpotentials associated to the underlining graded algebras, respectively. In particular, we will discuss the universal quantum group associated to a pair of three-dimensional Sklyanin algebras, whose ring-theoretic and homological behaviors need further investigation. This is a joint work with Alexandru Chirvasitu and Chelsea Walton. (Received September 16, 2016)