

## Generalizing classical Clifford algebras, graded Clifford algebras and their associated geometry

Graded Clifford algebras are non-commutative graded algebras related to classical Clifford algebras, and certain properties of such an algebra can be deduced from certain commutative geometric data associated to it. In particular, a standard result is that a graded Clifford algebra  $C$  is quadratic and Artin-Schelter regular with Hilbert series equal to that of a polynomial ring if and only if a certain quadric system associated to  $C$  is base-point free. About two decades ago, T. Cassidy and the speaker introduced a generalization of such an algebra, called a graded skew Clifford algebra, and they found that many results concerning graded Clifford algebras have analogues in the case of graded skew Clifford algebras, provided the appropriate non-commutative geometric data is defined. More recently, T. Cassidy and the speaker defined a “skew” version of classical Clifford algebras, and related such algebras to graded skew Clifford algebras. Indeed, just as (classical) Clifford algebras are the Poincaré-Birkhoff-Witt (PBW) deformations of exterior algebras, skew Clifford algebras may be viewed as  $\mathbb{Z}_2$ -graded PBW deformations of quantum exterior algebras.