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Non-commutative algebraic geometry revolves around the idea of studying connected graded algebras as homogeneous coordinate rings of “quantum projective varieties”. One of the central techniques in the field is to attach to such an algebra ordinary projective varieties classifying, for each n , the cyclic graded modules with Hilbert series $1 + t + \cdots + t^n$ (the n -truncated point modules of the non-commutative scheme).

We consider families of graded algebras defined by allowing their spaces of relations to vary smoothly over a parameter space, and study the behavior of the corresponding schemes of truncated points. It turns out that these form flat families whenever they have “expected” (meaning minimal) dimension. As an application, we confirm a conjecture of C. Brazfield to the effect “most” non-commutative weighted projective 3-spaces with weights $(1, 1, 2, 3)$ have seventeen points.

(joint w/ Ryo Kanda) (Received January 30, 2018)