1027-16-186   **Alex S. Dugas*** (`asdugas@math.ucsb.edu`), Department of Mathematics, University of California, Santa Barbara, CA 93106, and **Roberto Martinez-Villa**. *Stable equivalence of graded algebras.*

We extend the notion of stable equivalence to (possibly infinite-dimensional) graded algebras. For such an algebra Λ, we focus on the Krull-Schmidt category gr_Λ of finitely generated $\mathbb{Z}$-graded Λ-modules with degree 0 maps, and the stable category $\underline{\mathrm{gr}}_\Lambda$ obtained by factoring out those maps that factor through a graded projective module. We say that Λ and Γ are *graded stably equivalent* if there is an equivalence $\alpha : \underline{\mathrm{gr}}_\Lambda \xrightarrow{\approx} \underline{\mathrm{gr}}_\Gamma$ that commutes with the grading shift. Adapting arguments of Auslander and Reiten involving functor categories, we show that a graded stable equivalence α commutes with the syzygy operator (where defined) and preserves finitely presented modules. As a result, we see that if Λ is right graded noetherian (resp. right graded coherent), then so is any graded stably equivalent algebra. Furthermore, we use almost split sequences to show that a graded stable equivalence preserves finite length modules, and apply this fact in the cases where one algebra is torsion-free and/or Koszul. (Received February 26, 2007)