1027-14-115 **Paul Hacking*** (hacking@math.washington.edu), University of Washington, Department of Mathematics, Box 354350, Seattle, WA 98195-4350. *Noncommutative moduli spaces.*

Let X be a curve and M a moduli space of stable vector bundles on X with fixed determinant. Then there is a natural map $\mathrm{Def}(X) \to \mathrm{Def}(M)$ of the deformation spaces which is an isomorphism (Narasimhan–Ramanan 1974).

If now X is a surface, then there is not even a map in general — because, for example, if X is a K3 surface and E a vector bundle on X with $c_1(E) \neq 0$ then there are deformations of X such that E does not extend.

However, if we allow noncommutative deformations of X and M, then the result still holds in certain cases, e.g., if X and M are both K3 surfaces. The deformation of M is constructed as the noncommutative moduli space corresponding to a functor defined on an appropriate category of noncommutative rings.

This builds on earlier work of Kapranov and Pantev. (Received February 22, 2007)