1068-14-152 **Francisco J Gallego**, **Miguel Gonzalez** and **Bangere P Purnaprajna*** (purna@ku.edu), Department of Mathematics, University of Kansas, Lawrence, KS 66045. *Deformations of canonical morphism and the moduli of surfaces of general type.*

I will talk about the deformation of finite maps and show how to use this deformation theory to construct varieties with given invariants in a projective space. Among other things, we prove a criterion that determines when a finite map can be deformed to a one–to–one map. We use this criterion to construct new simple canonical surfaces–so-called by the Italian geometer Enriques– with different c_1^2 and χ. Our general results enable us to describe some new components of the moduli of surfaces of general type. We also find infinitely many moduli spaces $\mathcal{M}_{(x',0,y)}$ having one component whose general point corresponds to a canonically embedded surface and another component whose general point corresponds to a surface whose canonical map is a degree 2 morphism, a situation that is quite different from the case for curves or surfaces such as K3. (Received January 17, 2011)