Dan Halpern-Leistner: \Theta-reductive moduli problems, stratifications, and applications

I will discuss a structural framework for moduli problems which generalizes structures appearing in geometric invariant theory and in the moduli of coherent sheaves (as well as moduli of objects in derived categories). The idea is that for a locally finite type algebraic stack, a "solution" to the corresponding moduli problem should come in the form of a stratification which admits a nice modular interpretation, where the big open stratum admits a good moduli space and the remaining strata fiber over moduli problems which also admit good moduli spaces. For a class of moduli probems which we call \Theta-reductive, such stratifications can be described by specifying certain cohomology classes on the stack. Along the way I will discuss a new structure parameterizing degenerations of points in a stack which generalizes the fan of a toric variety and the spherical building of a semi-simple group. I will also discuss applications of these stratifications to derived categories of coherent sheaves and virtual localization formulas.