

PMATH 965: Deformation Theory with a Viewpoint Toward Moduli Spaces

One way of gaining insight into geometric objects (e.g. curves of genus g) is to consider the space of all such geometric objects. These so-called moduli spaces play a fundamental role in algebraic geometry. Deformation theory is the study of how geometric objects change until small perturbations, thereby giving the local structure of moduli spaces. We will discuss Schlesinger's Criterion, the basics of the cotangent complex, variations of Hodge structures and give applications to Hilbert schemes of points, curves, K3 surfaces, and abelian varieties.