Title: Calabi–Yau 3-folds, their vector bundles and deformations.

Abstract:We will give a brief review of the deformation theory of complex structures developed by Kodaira and Spencer. Subsequently we focus on a special type of Calabi-Yau 3-folds, defined as total spaces of rank two vector bundles over the complex projective line $\mathbb{P}^1$. We discuss some aspects of deformations of non-compact manifolds and construct an infinite dimensional family of deformations in a specific case. Finally we make a comparison between vector bundles on surfaces and threefolds.