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K-THEORY OF CREPANT RESOLUTIONS OF COMPLEX ORBIFOLDS WITH $SU(2)$ SINGULARITIES

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ABSTRACT. We show that if Q is a closed, reduced, complex orbifold of dimension n such that every local group acts as a subgroup of $SU(2) < SU(n)$, then the K-theory of the unique crepant resolution of Q is isomorphic to the orbifold K-theory of Q.

1. Introduction. Let Q be a reduced, compact, complex orbifold of dimension n, i.e., a compact Hausdorff space locally modeled on $\mathcal{C}^n/G$ where G is a finite group which acts effectively on $\mathcal{C}^n$ with a fixed-point set of codimension at least 2 (for details of the definition and further background, see [**3**]). Then a crepant resolution of Q is given by a pair (Y, π) where Y is a smooth complex manifold of dimension n and $\pi : Y \to Q$ is a surjective map which is biholomorphic away from the singular set of Q, such that $\pi^* K_Q = K_Y$ where K_Q and K_Y denote the canonical line bundles of Q and Y, respectively (see [**7**] for details). In [**11**], it is conjectured that if $\pi : Y \to Q$ is a crepant resolution of a Gorenstein orbifold Q, i.e., an orbifold such that all groups act as subgroups of $SU(n)$, then the orbifold K-theory of Q is isomorphic to the ordinary K-theory of Y. For the case of a global quotient of $\mathcal{C}^n$, this has been verified for $n = 2$ in [**10**] and, for Abelian groups and a specific choice of crepant resolution for $n = 3$ in [**5**]. Here, we apply the 'local' results in the case $n = 2$ to the case of a general orbifold with such singularities.

The K-theory of an orbifold can be defined in several different ways. First, it can be defined in the usual way in terms of equivalence classes of orbifold vector bundles, see [**1**]. As well, it is well known that a reduced orbifold Q can be expressed as the quotient P/G where P is a smooth manifold and G is a compact Lie group [**8**]. In the case of a real orbifold, P can be taken to be the orthonormal frame bundle

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