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AN ADAMS-RIEMANN-ROCH THEOREM IN ARAKELOV GEOMETRY

DAMIAN ROESSLER

CONTENTS

1. Introduction. In this paper, we investigate relative Riemann-Roch formulas for the λ-operations acting on Grothendieck groups "compactified" in the sense of Arakelov geometry. Let Y be a quasi-projective scheme over $\mathbf{Z}$ that is smooth over $\mathbf{Q}$. We call such a scheme an arithmetic variety. Following [20, *II*], one can associate to Y an arithmetic Grothendieck group $\hat{K}_0(Y)$, whose generators are differential forms and vector bundles on Y equipped with hermitian metrics on the manifold $Y(\mathbf{C})$ of complex points of Y. The group $\hat{K}_0(Y)$ is related to the Grothendieck group $K_0(Y)$ of vector bundles of Y via the

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