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Remarks on automorphism and cohomology of finite cyclic coverings of projective spaces.
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Authors’ abstract: For a smooth finite cyclic covering over a projective space of dimension greater than one, we show that its group of automorphisms faithfully acts on its cohomology except for a few cases. In characteristic zero, we study the equivariant deformation theory and groups of automorphisms for complex cyclic coverings. The proof uses the decomposition of the sheaf of differential forms due to Esnault and Viehweg. In positive characteristic, a lifting criterion of automorphisms reduce the faithfulness problem to characteristic zero. To apply this criterion, we prove the degeneration of the Hodge-de Rham spectral sequences for a family of smooth finite cyclic coverings, and the infinitesimal Torelli theorem for finite cyclic coverings defined over an arbitrary field.

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MSC:
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14E20 Coverings in algebraic geometry

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