

**Berthelot, Pierre**

**Finiteness and cohomological purity in rigid cohomology (with an appendix by Aise Johan de Jong). (Finitude et pureté cohomologique en cohomologie rigide (avec un appendice par Aise Johan de Jong).)** (French) [Zbl 0908.14005](#)  
*Invent. Math.* 128, No. 2, 329-377 (1997).

The paper under review proves finiteness for the rigid cohomology of a smooth scheme over a field of positive characteristic. The idea of the proof follows the classical lines developed by Grothendieck and Hartshorne in characteristic zero (induction over dimension, use of cohomology with support, smooth compactification). The main new ingredient is de Jong's fibration and alteration technique. The technical tools are the machinery of rigid and overconvergent cohomology, and the Gysin isomorphism for smooth subschemes. The latter requires a surprising amount of work.

Reviewer: [G.Faltings \(Bonn\)](#)

**MSC:**

- [14F20](#) Étale and other Grothendieck topologies and (co)homologies
- [14F30](#)  $p$ -adic cohomology, crystalline cohomology
- [14F17](#) Vanishing theorems in algebraic geometry
- [14G20](#) Local ground fields in algebraic geometry

Cited in **5** Reviews  
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**Keywords:**

finiteness for the rigid cohomology; positive characteristics; alteration; Gysin isomorphism

**Full Text:** [DOI](#)