

Virrion, Anne

Trace and relative duality for arithmetic \mathcal{D} -modules. (Trace et dualité relative pour les \mathcal{D} -modules arithmétiques.) (French) [Zbl 1083.14017](#)

Adolphson, Alan (ed.) et al., Geometric aspects of Dwork theory. Vol. I, II. Berlin: Walter de Gruyter (ISBN 3-11-017478-2/hbk). 1039-1112 (2004).

The main purpose of this highly technical paper is to provide a complete detailed proof of the relative duality theorem for proper morphisms on smooth schemes of unequal characteristics. Some announcement of this result was given by the author in [C. R. Acad. Sci., Paris, Sér. I 319, No. 12, 1283–1286 (1994; [Zbl 0829.14010](#)) and C. R. Acad. Sci., Paris, Sér. I 321, No. 6, 751–754 (1995; [Zbl 0876.14011](#))].

The key point of the proof is the construction of a trace-morphism for the residual complexes of \mathcal{D} -modules, similar to the one established by Grothendieck and Hartshorne for \mathcal{O} -modules, compatible with the usual trace-morphism. Also, a corresponding adjunction formula for proper morphisms is deduced.

For the entire collection see [[Zbl 1047.14001](#)].

Reviewer: [Tan VoVan \(Boston\)](#)

MSC:

- [14F10](#) Differentials and other special sheaves; \mathcal{D} -modules; Bernstein-Sato ideals and polynomials
- [32C38](#) Sheaves of differential operators and their modules, \mathcal{D} -modules
- [14G20](#) Local ground fields in algebraic geometry
- [14F30](#) p -adic cohomology, crystalline cohomology

Cited in **11** Documents