Dimca, Alexandru; **Maaref, Fayçal**; **Sabbah, Claude**; **Saito, Morihiko**
Dwork cohomology and algebraic $\mathcal{D}$-modules. (English) Zbl 0985.14007
Math. Ann. 318, No. 1, 107-125 (2000).

Using local cohomology and algebraic $\mathcal{D}$-modules, the authors generalize a comparison theorem between relative de Rham cohomology and Dwork cohomology. More precisely, let X and S be smooth complex algebraic varieties, $p : X \to S$ a map, $\pi : V \to X$ an algebraic vector bundle with rank r, $s : X \to V^*$ a section of the dual vector bundle and $Y = s^{-1}(0)_{\mathrm{red}}$. Let $M^\bullet$ be a bounded complex of quasi-coherent left $\mathcal{D}_X$-modules and denote by $(\pi^* M^\bullet)_s$ the complex of $\mathcal{D}$-modules with twisted action of $\mathcal{D}_V$ by s. Let π_+ denote the direct image of algebraic left $\mathcal{D}$-modules.

One proves the following comparison result:

Theorem. There is a canonical isomorphism in the derived category of left $\mathcal{D}_X$-modules

$$\mathbf{R}\Gamma_Y M^\bullet[r] = \pi_+\big((\pi^* M^\bullet)_s\big).$$

Reviewer: Vasile Brînzănescu (Bucureşti

MSC:

14F10	Differentials and other special sheaves; D-modules; Bernstein-Sato ideals and polynomials	Cited in **3** Reviews Cited in **9** Documents
32S40	Monodromy; relations with differential equations and D-modules (complex-analytic aspects)	
32C38	Sheaves of differential operators and their modules, D-modules	
14F40	de Rham cohomology and algebraic geometry	

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algebraic $\mathcal{D}$-modules; de Rham cohomology; Dwork cohomology

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