

MODULI OF REGULAR HOLONOMIC \mathcal{D} -MODULES
WITH NORMAL CROSSING SINGULARITIES

NITIN NITSURE

CONTENTS

1. Introduction	2
2. Preliminaries on normal crossing divisors	4
2.1. Basic definitions	4
2.2. Summary of basic notation	7
3. Pre- \mathcal{D} -modules on (X, Y)	9
3.1. Global definition	9
3.2. Restriction to a polydisk	11
3.3. Motivation for the definition	12
4. From pre- \mathcal{D} -modules to \mathcal{D} -modules	13
4.1. The case when Y is smooth	13
4.2. General case of a normal crossing Y	15
4.3. The V -filtration for a polydisk	16
5. Moduli for semistable pre- \mathcal{D} -modules	17
5.1. Preliminaries on Λ -modules	17
5.2. Families of pre- \mathcal{D} -modules	19
5.3. Filtrations and 1-parameter deformations	19
5.4. Quot scheme and group action on total family	21
5.5. Semistability and moduli for Λ -modules	23
5.6. Strong local freeness for semistable Λ -modules	24
5.7. Semistable pre- \mathcal{D} -modules defined	25
5.8. Semistable pre- \mathcal{D} -modules—the local universal family	27
5.9. Stability and points of the moduli	28
6. Perverse sheaves on (X, Y)	30
6.1. The specialization functor	31
6.2. Finite representation	32
6.3. Moduli for perverse sheaves	35
7. The Riemann-Hilbert morphism	35
7.1. Definition of the Riemann-Hilbert morphism	36
7.2. Properties of the Riemann-Hilbert morphism	38
References	38

Received 24 March 1997. Revision received 3 June 1998.

1991 *Mathematics Subject Classification*. Primary 14F10; Secondary 14D20, 32G34, 32C38.