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The Simple Holonomic Modules over the Ring of Differential Operators on a Smooth Algebraic Surface

The aim of the talk is to present a classification (up to pairs of certain irreducible elements) of the simple holonomic modules over (i) the rings $\mathcal{D}(R)$ of differential operators on a smooth algebraic surface that is a "product of two curves". (ii) simple generalized Weyl algebras of Gelfand-Kirillov dimension 4. The present talk is based on the joint papers with F. Van Oystayen, [1,2].

[1] The simple holonomic modules over the second Weyl algebra A_2, prepr. Univ. of Antwerp, U. I. A., (1997); Adv. in Math., (to appear).

[2] The simple holonomic modules of the rings of differential operators with regular coefficients of Krull dimension 2, prepr. Univ. of Antwerp, U. I. A., (1998); Trans. AMS, (to appear).