DIFFERENTIAL MODULES OVER A DIFFERENTIAL RING

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ABSTRACT. Let R be a commutative differential ring which is an algebra over a differential field F, the latter of characteristic 0 and with algebraically closed field of constants. Consider the category of differential R-modules every element of which satisfies a linear homogeneous differential equation over F, where it is required that R itself be in this category. In particular simple differential R-modules and injective differential R-modules are of interest, especially in the case that R itself is differentially simple. In this latter case, the R-module properties of differential R-modules are of special interest.

This work is motivated by the similar theory where R is a ring on which an algebraic group G acts rationally and R-modules which are rational G-modules are examined; the talk will review this theory.