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Greg Muller* (gmuller@lsu.edu) and **Yuri Berest**. *Reflexive and Projective D-modules*. Preliminary report.

We study reflexive and projective D-modules over the ring of differential operators on a smooth algebraic variety. We describe such modules in terms of certain infinite-dimensional Grassmannians, extending the approach of Cannings-Holland from curves to higher dimensions. Our research is motivated, on the one side, by a known classification of right ideals in the first Weyl algebra and by interesting higher dimensional examples coming from representation theory and integrable systems. The bispectral problem has an appealing characterization in this language. We will review the results, give some new interesting examples, and discuss the application to the bispectral problem. (Received September 21, 2010)