



On rings of commuting partial differential operators

A. B. Zheglov

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We give a natural generalization of the classification of commutative rings of ordinary differential operators, given in works of Krichever, Mumford, Mulase, and determine commutative rings of operators in a completed ring of partial differential operators in two variables (satisfying certain mild conditions) in terms of Parshin's generalized geometric data. It uses a generalization of M.Sato's theory and is constructible in both ways.

Comments: 40 p. V2: This is an extended version with corrected typos and inaccuracies in some definitions and claims; several statements and remarks in part 3 added; new part 4 with more examples and a new theorem 4.1 added; introduction extended; new references added V3: Introduction is slightly modified, several remarks added, typos corrected V4: minor change

Subjects: **Algebraic Geometry (math.AG)**; Mathematical Physics (math-ph)

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