

Holonomic modules over Cherednik algebras

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We propose a geometric theory of modules over Cherednik algebras on varieties with a group action, which generalizes the classical theory of D-modules. In particular, this develops Losev's theory of holonomic modules over quantizations of (singular) symplectic varieties in the case quotients X/G where X is smooth symplectic and G is a finite group. Specifically, we develop a theory of direct and inverse image functors for such modules, and establish key properties of such functors, e.g. that they map holonomic modules to holonomic ones, and that Exts between holonomic modules are finite dimensional. This is joint work with Gwyn Bellamy and Daniel Thompson.