The p-curvature and Bost's Conjecture for the Gauss-Manin connection on non-abelian de Rham cohomology

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111 Cummington Mall, MCS B21
Tea and cookies in MCS 144 at 4:00 pm

Abstract: I'll begin with Bost's generalization of the p-curvature conjecture, and describe the classical geometric concepts at play such as the horizontal subbundle corresponding to a connection and parallel transport. This naturally motivates the discovery of the Gauss-Manin connection on algebraic de Rham cohomology, and its non-abelian analogue due to Simpson. I'll state Katz's theorem that the p-curvature conjecture (equivalently Bost) holds for the abelian Gauss-Manin connection, and the ingredients to even make that statement, such as the Hodge filtration, conjugate filtration, and Kodaira-Spencer map. I'll then define non-abelian analogues of these objects, and state a theorem which suitably equates them. This is the non-abelian analogue of part 1 of Katz's theorem, and is progress towards proving Bost for the non-abelian Gauss-Manin connection.