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Essential dimension of symplectic vector bundles over a curve

Essential dimension of an algebraic object, introduced by J.Buhler and Z.Reichstein, is defined as the minimal number of algebraic variables needed to parameterize the object. The essential dimension of a moduli stack is defined as the supremum of the essential dimension of objects it parameterizes. This number can be computed only in a handful of cases. In general, bounds are hard to obtain, however Dhillon, Hoffmann and Biswas obtained such an upper bound for vector bundles over a smooth projective curve.

In this poster, we generalise these results in the case of symplectic vector bundles. The essential dimension of a symplectic vector bundle can be broken into two terms, namely the transcendence degree of its field of moduli and the essential dimension of the bundle over its field of moduli. We show that the first part can be related to the essential dimension of hermitian modules over an algebra, while the second part can be bounded by the dimension of moduli stack of symplectic vector bundles equipped with nilpotent morphism of symplectic type. We prove that the latter object is smooth and hence its dimension can be computed by a Riemann-Roch formula.