On the Beauville-Bogomolov decomposition in positive characteristic

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Abstract

I will present a work in progress joint with Maciej Zdanowicz aiming to prove a positive characteristic version of the Beauville-Bogomolov decomposition. Over the complex numbers this decomposition was shown using differential geometry methods in the 70’s and the 80’s. It concerns varieties with trivial canonical bundle, which we call K-trivial here. The main statement over the complex numbers is that smooth projective K-trivial varieties admit an étale cover which splits as a product of three types of varieties: abelian, Calabi-Yau and symplectic. I will present a similar statement in positive characteristic for (weakly) ordinary K-trivial varieties over perfect fields, the proof of which uses purely positive characteristic methods.