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Vanishing Theorems in Positive Characteristic

vendredi 26 avril 2024 09:30 (1 heure)

Starting from the seminal book of Hélène Esnault and Eckart Viehweg on vanishing theorems my talk will be centered around vanishing theorems in positive characteristics. The Kodaira and Kawamata—Viehweg vanishing theorems are incredibly useful in Complex geometry but fail in general to be true over fields of positive characteristics. It was long expected that this failure would be pathological and that these theorems still would be true for some important classes of varieties, such as log Fano varieties. It turns out that starting from dimension two there are log Fano varieties which contradict Kodaira vanishing. However, the known constructions have the dimension of the Fano variety increasing with the characteristic of the base field. One could therefore ask if in any given dimension log Fano's satisfy this vanishing theorem in large enough characteristic depending on the dimension? In this direction, joint with Fabio Bernasconi and Justin Lacini we proved that the Kawamata—Viehweg vanishing theorem holds on log del Pezzo surfaces over a perfect field of characteristic $p>5$.

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