Boundedness for foliated surfaces

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Quimper, March 7-11, 2022

The birational classification of foliated surface is pretty much complete, thanks to the work of Brunella, Mendes, McQuillan. The next obvious step in this endeavour, in analogy with the classical case of projective varieties and log pairs, is to construct moduli spaces for foliated varieties. The first question to ask, on the road to constructing a moduli space, is how to show that foliated varieties of fixed Kodaira dimension are bounded, that is, they come in finitely many algebraic families — provided, of course, that we fix certain appropriate numerical invariants. It turns out that, to best answer this question, rather than working with the canonical divisor of a foliation it is better to consider linear systems of the form $|nK_X + mK_{\mathcal{F}}|$, $n, m > 0$, as those encode a lot of the positivity features that classically the canonical divisor of an projective variety displays. In this talk, I will introduce this framework and explain how this approach leads to answering the question about boundedness for foliated surfaces. This talk features joint work with C. Spicer.