COMPUTING THE PARAMETRIZATION OF ALGEBRAIC VARIETIES OVER THE FIELD OF DEFINITION

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A parametric algebraic variety might have a (simpler) parametrization over its field of definition (i.e. the smallest possible one where the variety can be implicitly defined). In the talk, from a given parametrization over some finite algebraic extension of degree d of a base field k, we will present different approaches to detect if the variety is k-definable and k-parametrizable.

Then we will be lead to study a particular collection (which, in the case of curves, could be thought as the image of k on a Moebius transform of k^d) of varieties associated, in a natural way, to the algebraic extension and, therefore, somehow independent on the complexity of the input parametric variety. Examples of this approach, for curves and surfaces, will be performed and discussed during the talk.