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*Rationality of the local density function*

Local densities are local factors of the Siegel mass formula for an integral quadratic form over a number field. It is essential to compute all local densities for every prime in order to classify integral quadratic forms.

In this talk, I will explain that the local density function with respect to the size of a residue field, when we vary a base complete local ring to its finite unramified extension, is a rational function (i.e. polynomial divided by another polynomial).