
BERN-FRIBOURG GRADUATE SEMINAR

a seminar for Master and PhD students

Thursday 6th March, 2025: 17:15 - 18:00

Room 2.52, Perolles 08, Fribourg

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Noetherianity up to symmetry

Abstract

Varieties — subsets of k^n cut out by polynomials, where k is a field — are among the most well-studied objects in mathematics. It is a basic fact that any variety can be cut out by a finite set of polynomial equations, since the polynomial ring $k[x_1, \dots, x_n]$ has the property that all of its ideals are finitely generated. Rings with this property are called Noetherian (after Emmy Noether, who first championed their importance) and they are a fundamental tool in modern algebraic geometry.

For mathematicians interested in "infinite-dimensional varieties" however, e.g. sets of sequences in k satisfying some polynomial equations from $k[x_1, x_2, x_3, \dots]$, the situation looks dire: The rings involved are far from being Noetherian. In this talk, we will see how in the presence of certain symmetries, a property analogous to Noetherianity reemerges to save the day.

No familiarity with algebraic geometry is assumed — this talk should also serve as a gentle informal introduction to some (if few) of its basic concepts.