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MATHEMATICS DEPARTMENT 25TH YEAR SEMINARS

Proofs by example

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Abstract: We study the proof method “proof by example” in which a general statement can be proved by verifying it for a single example. This strategy can indeed work if the statement in question is an algebraic identity and the example is “generic”. This talk addresses the problem of constructing a practical example, which is sufficiently generic, for which the statement can be verified efficiently, and which allows for a numerical margin of error.

Our method is based on diophantine geometry, in particular an arithmetic Bezout theorem, an arithmetic Nullstellensatz, and a new effective Liouville-Lojasiewicz type inequality for algebraic varieties. As an application we discuss theorems from plane geometry and how to prove them by example.

Date: Mar 19, 2021; Friday

Time: 18:00

Place: Zoom.



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