

## **MATHEMATICAL INDUCTION versus FINITE DESCENT**

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Since the first half of the 20<sup>th</sup> century, the axiomatic system for natural numbers generally adopted is the axiom system of Giuseppe Peano. The most important (and the most complicated) axiom in this system is certainly the last one: the axiom of mathematical induction. The mathematical induction as a tool for proving mathematical theorems goes back to Euclid's Elements. However, it is not widely understood by the general mathematical community that (up to some minor adaptations) this axiom is equivalent to another property of natural numbers: the set of natural numbers is well ordered. The well-ordered property has been used for the first time in mathematics in the Fermat's method of infinite descent. In this talk, the connection between the two axioms will be discussed, and an approach based on the descent method will be advocated.

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