INSALATE DI MATEMATICA

Why Class Groups Matter: From Fermat's Last Theorem to Modern Arithmetic

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IN THIS TALK

One of the most famous equations in mathematical history is:

$$X^n + Y^n = Z^n$$

Does it have nontrivial integer solutions for $n>2$? In 1637, Pierre de Fermat famously claimed—without proof—that it does not. About 200 years later Kummer approached this problem by introducing class groups, which are finite abelian groups attached to number fields measuring their arithmetic complexity.

In this talk, we begin with this classical story and then turn to more modern developments, focusing on Iwasawa theory, where one studies how class groups behave in infinite towers of number fields.

If time permits, we will also discuss recent results on a Hilbert 90—type property for generalized class groups and its connection to an open conjecture in Iwasawa theory. There is a marvelous Fermat joke, but this abstract is too small to contain it — join the talk to find out more.

🔑words: Class groups, Fermat's last theorem, Iwasawa theory, Hilbert 90 theorem

"Obvious" is the most dangerous word in mathematics.
(Eric Temple Bell)

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U9 - 13 📍
4:45 pm (CET) 🕐