

Reciprocity laws for torsion classes

Ana Caraiani

Imperial College London

a.caraiani@imperial.ac.uk

The Langlands program is a vast network of conjectures that connect many areas of pure mathematics, such as number theory, representation theory, and harmonic analysis. At its heart lies reciprocity, the conjectural relationship between Galois representations and modular, or automorphic forms.

A famous instance of reciprocity is the modularity of elliptic curves over the rational numbers: this was the key to Wiles's proof of Fermat's last theorem. I will give an overview of some recent progress in the Langlands program, with a focus on new reciprocity laws over imaginary quadratic fields.