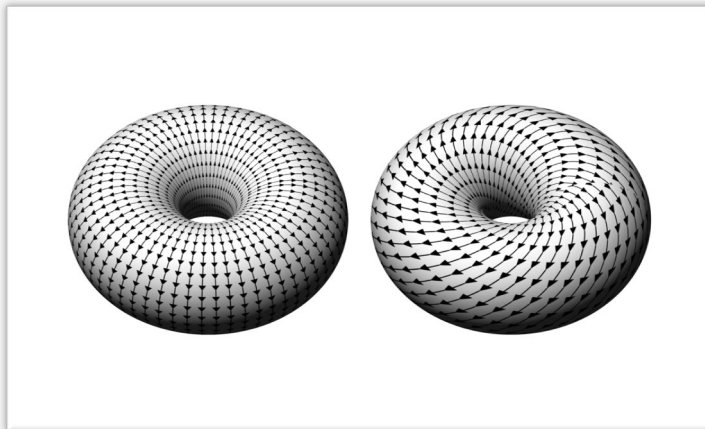


LTCC Christmas Lecture 2025

By Dr Ivan Tomasic from
Queen Mary University of London

“Galois Theories: Old and New”



Galois famously developed his theory of permutation groups of roots of polynomial equations in 1830, in order to understand the long-standing problem of solvability of equations by radicals. An analogous theory of symmetries of linear differential equations was initiated in 1883 by Picard and Vessiot.

The theory of the fundamental group of topological spaces can be viewed as a geometric analogue of Galois theory, and Grothendieck's 1970's theory of the étale fundamental group is a direct algebraic-geometric generalisation of Galois theory, with a 2015 pro-étale uplift by Bhatt-Scholze.

In all these instances, a category of objects of interest is classified by actions of a certain type of a group or a groupoid, and we may consider every result of this type a form of a Galois theory.

Janelidze developed a very general categorical Galois theory in 1980s. We will show how it broadly encompasses all of the above examples, and discuss our recent work with Noohi that vastly generalises differential Galois theory to differential schemes.

Join as on Monday 8th December 2025 at 6pm
UCL, Room 505, 25 Gordon Street, London, WC1H 0AY
for a magical lecture, followed by food and drinks.

RSVP by 1st December to office@ltcc.ac.uk