

MATEMATISKA INSTITUTIONEN  
STOCKHOLMS UNIVERSITET  
Avd. Matematik

## SJÄLVSTÄNDIGT ARBETE I MATEMATIK

Onsdagen den 9 mars kl. 10.00–11.00 presenterar Alexis Seferlis sitt arbete “The Galois theory” (15 högskolepoäng, grundnivå).

Handledare: Torsten Ekedahl

Plats: Sal 21, hus 5, Kräftriket

Abstract: Mathematicians of the 18th century had available methods to express the roots of polynomial equations of degree up to four in terms of the coefficients of the equation, but no method that would solve an arbitrary quintic or higher degree equation. Lagrange observed that all these methods are ruled by a single pattern based on symmetry. Later on Évariste Galois realized that the appearance of symmetry was a consequence of properties of an asymmetry, namely a function/expression of the roots of the equation, nowadays called the Galois Resolvent, which is not symmetric at all and is such that the roots can be rationally expressed in terms of this function. The Galois resolvent when interpreted as an element of a certain field gives rise to a group, nowadays called the Galois group, which will be characterized as the group consisting of those permutations of the roots of the polynomial that leave rational expressions in the roots, which lie in the field, unaltered. The property of a polynomial being solvable over a field will be described in terms of its Galois group. Finally, we present the modern formulation of Galois Theory of finite field extensions due to Emil Artin.

Alla intresserade är välkomna!