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Chad Awtrey* (cawtre@elon.edu). *Some open problems in computational Galois theory.*

The work of 19th century mathematician Evariste Galois shows that roots of polynomials have inherent symmetries, which are encoded as permutations of the roots. In the language of abstract algebra, these symmetries form a group under function composition, called the polynomial's Galois group. Properties of the polynomial's Galois group reveal arithmetic about the polynomial. For example, a polynomial's roots using radicals if and only if the Galois group has a certain property. Naturally, a fundamental task in computational algebra is to determine the Galois group of a polynomial. In this talk, we will discuss the history and context of Galois' work, recent computational results, as well as some potential open problems suitable for investigation by undergraduate students. (Received September 25, 2017)