

ALGEBRA
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An algebraic approach to enumerating field extensions

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Abstract: Building on previous work of Cohen and several of his collaborators, I will discuss the use of Kummer theory and class field theory to enumerate field extensions of low degree. We obtain an explicit Dirichlet series representation, in the form of a finite sum of Euler products, for the set of field extensions with Galois group S_3 , A_4 , S_4 , or D_l (l an odd prime) with fixed resolvent. This has a variety of interesting consequences, including results on the Shintani zeta function as well as an extension of the Scholz reflection principle, which I will describe. Most of this is joint work with Henri Cohen, and one part is also joint with Simon Rubinstein-Salzedo.

Monday, September 22, 2014, 4:00 pm
Mathematics and Science Center: W302

MATHEMATICS AND COMPUTER SCIENCE
EMORY UNIVERSITY