

FROBENIUS DISTRIBUTIONS IN GL-EXTENSIONS
A.C. COJOCARU

1. COURSE OUTLINE

- (1) Primes
- (2) Elliptic curves
- (3) Division fields
- (4) Elliptic curves mod p
- (5) Characterization of Frobenius in division fields
- (6) Questions about the elementary divisors of an elliptic curve mod p
- (7) Questions about the order of an elliptic curve mod p
- (8) Questions about the Frobenius of an elliptic curve mod p
- (9) Higher perspectives: global settings
- (10) Higher perspectives: higher dimensions

2. PROJECT FOUNDATIONS

Any of the following papers:

A. Balog, A.C. Cojocaru, and C. David, *Average twin prime conjecture for elliptic curves*, American Journal of Mathematics, Vol. 133, No. 5, 2011, 1179–1229.

A.C. Cojocaru, R. Davis, A. Silverberg, and K.E. Stange, *Arithmetic properties of the Frobenius traces defined by a rational abelian variety*, with appendices by J-P. Serre, preprint 2015, <http://arxiv.org/abs/1504.00902>

A.C. Cojocaru and M.R. Murty, *Cyclicity of elliptic curves modulo p and elliptic curve analogues of Linnik's problem*, Mathematische Annalen 330, 2004, 601–625.

D. Fiorilli, *Residue classes containing an unexpected number of primes*, Duke Math. Journal Vol. 161, No. 15, 2012, 2923–2924.

S. Lang and H. Trotter, *Frobenius distributions in GL_2 -extensions*, Lecture Notes in Mathematics 504, Springer Verlag, 1976.

J-P. Serre, *Propriétés galoisiennes des points d'ordre fini des courbes elliptiques*, Inventiones Math. Vol. 15, No. 4, 1972, 259–331.

J-P. Serre, *Quelques applications du théorème de densité de Chebotarev*, Publ. Math. I. H. E. S. No. 54, 1981, 123–201.

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