

**Meeting:** 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-11-537      **Charles T. Pooh\*** (pooh@math.uga.edu), Department of Mathematics, University of Georgia,  
Athens, GA 30602. *Explicit Galois stable sets of algebraic integers in a given set of points.*

Let  $E$  be a compact set in the plane, stable under complex conjugation and having logarithmic capacity  $\gamma(E)$ . We prove effective versions of the classical theorems of Fekete and Fekete-Szegö. Specifically, we show that if  $\gamma(E) < 1$  then there is a monic polynomial  $P(w) \in \mathbb{Z}[w]$ , whose degree and coefficients are bounded explicitly in terms of  $\gamma(E)$ , such that the region  $|P(w)| < 1$  contains an  $\epsilon$ -neighborhood of  $E$ . If  $\gamma(E) \geq 1$ , each  $\epsilon$ -neighborhood of  $E$  contains a level curve  $|P(w)| = c$  where the integer  $c$ , the degree and the coefficients of the monic polynomial  $P(w) \in \mathbb{Z}[w]$  are bounded explicitly in terms of  $\epsilon$  and  $\gamma(E)$ . (Received September 21, 2004)