Meeting: 1003, Atlanta, Georgia, SS 13A, AMS Special Session on Algebraic Geometry Codes

1003-94-1349 **Jeffrey B. Farr*** (jfarr@cecm.sfu.ca), 8888 University Dr., Burnaby, B.C. V5A 1S6, Canada, and **Shuhong Gao** and **Daniel L. Noneaker**. *A Polynomial Method for Algebraic Geometry Codes.*

We describe a class of codes whose construction is based on the evaluation of multivariate polynomials at a prescribed set of affine points. It turns out that any one-point algebraic geometry code may be described in this way. Additionally, we present a natural decoding algorithm for our codes using only the methods of polynomial algebra, namely Groebner bases. We also discuss the possibility of generating "random" linear codes via this process and using the decoding algorithm to ascertain the potential worth of the codes. We present computational results on the practical performance of this latter method.

Joint work with Shuhong Gao and Daniel Noneaker (Received October 04, 2004)