1023-94-1886 **Jing Jiang** and **Krishna R Narayanan*** (krn@ece.tamu.edu), Department of Electrical and Computer Enginee, Texas A&M University, College Station, TX 77845. *Algebraic Soft Decision Decoding of Reed Solomon Codes using Bit-level Soft Information.*

The performance of algebraic soft-decision decoding (ASDD) of Reed-Solomon (RS) codes using bit-level soft information is investigated. Multiplicity assignment strategies and their performance are studied for ASDD of medium to high rate RS codes over a mixed bit-level error and erasure channel. The bit-level decoding region of the proposed MAS is shown to be significantly larger than that of conventional Berlekamp-Massey (BM) decoding. As an important application, a bit-level generalized minimum distance (BGMD) decoding algorithm is proposed. The proposed BGMD algorithm compares favorably with many other RS soft-decision decoding algorithms on various channels. Moreover, owing to the simplicity of BGMD, its performance can be tightly bounded using ordered statistics. (Received September 27, 2006)