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

1003-94-738 **Ralf Koetter** and **Wen-Ching Winnie Li*** (`wli@math.psu.edu`), Department of Mathematics, Pennsylvania State University, University Park, PA 16802, and **Pascal O. Vontobel** and **Judy L. Walker**. *Pseudo-codewords of cycle codes via zeta functions.*

Cycle codes are a special case of low-density parity-check codes. As such, they can be decoded using an iterative message-passing decoding algorithm on the associated Tanner graphs. The existence of pseudo-codewords is known to cause the decoding algorithm to fail in certain instances. In this talk we describe two ways to characterize the pseudo-codewords of a cycle code: one in terms of the edge zeta function attached to the underlying graph, the other in terms of the lattice points of the fundamental cone of the code. (Received September 28, 2004)