1060-94-16 **Yasuaki Hiraoka*** (hiraok@hiroshima-u.ac.jp), 33rd & Walnut street, DRL, Philadelphia, PA. *Rational Maps and Maximum Likelihood Decoding: Duality in Algebraic Geometry Codes.*

A new approach to coding theory via dynamical systems is presented in this talk. A key idea is to deal with a bit-wise maximum likelihood decoding as a rational map. The main theorem shows that this rational map can be approximated with low computational complexity and high accuracy by controlling the minimum distance of its dual code. One of the contribution of this result is to give a new application of algebraic geometry codes, which enables us to design a good code in both the senses of long minimum distance and low computational complexity for decodings. A simple example to this direction is shown by studying the Hermitian curve for a code design. (Received January 15, 2010)