

**Meeting:** 998, Houston, Texas, SS 17A, Special Session on Coding Theory and Cryptography

998-94-323            **Hai Quang Dinh\*** (Hai.Dinh@ndsu.nodak.edu), Hai Quang Dinh, Department of Mathematics, North Dakota State University, Fargo, ND 58105. *Structure and minimum Hamming weight of negacyclic codes over Galois rings.*

Negacyclic codes over the ring of integer modulo 4 have been studied by a lot of researchers. The situation where the length  $n$  of the code is odd has been characterized over the alphabet  $\mathbb{Z}_4$ , and furthermore has been generalized to the case of alphabet being a finite commutative chain ring. In this talk, we will study negacyclic codes of length  $2^s$  over Galois rings. It will be showed that  $\frac{\text{GR}(2^a, m)}{\langle x^{2^s} + 1 \rangle}$  is indeed a chain ring, and hence obtain the complete structure of negacyclic codes of length  $2^s$  over  $\text{GR}(2^a, m)$ , as well as that of their duals. We also study the minimum Hamming weights of such negacyclic codes. Open directions for further investigations will also be discussed. (Received March 01, 2004)