1038-94-285   **Hai Q. Dinh*** (`hdinh@kent.edu`), Department of Mathematical Sciences, Kent State University, 4314 Mahoning Avenue, Warren, OH 44483. *Constacyclic Codes Of Length p^s Over $\mathbb{F}_{p^m} + u\mathbb{F}_{p^m}$.*

All constacyclic codes of length p^s over the ring $\mathcal{R} = \mathbb{F}_{p^m} + u\mathbb{F}_{p^m}$ are studied. The units of the ring $\mathcal{R}$ are of the forms γ, and $\alpha + u\beta$, where α, β, γ are nonzero elements of $\mathbb{F}_{p^m}$, which provide $p^m(p^m - 1)$ such constacyclic codes. First, the structure and Hamming distances of all constacyclic codes of length p^s over the finite field $\mathbb{F}_{p^m}$ are obtained, and used as a tool to establish the structure and Hamming distances of all $(\alpha + u\beta)$-constacyclic codes of length p^s over $\mathcal{R}$. We then classify all γ-constacyclic codes of length p^s over $\mathcal{R}$ by categorizing them into 4 types: trivial ideals, principal ideals with nonmonic polynomial generators, principal ideals with monic polynomial generators, and nonprincipal ideals; and we give a detailed structure of ideals in each type. Among other results, we are also able to obtain the number of codewords in each γ-constacyclic code. (Received February 12, 2008)