1057-94-437   **Hai Q Dinh*** (`hdinh@kent.edu`), Department of Mathematical Sciences, Kent State University, 4314 Mahoning Avenue, Warren, OH 44483. *Repeated-Root Constacyclic Codes Of Prime Power Length 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 investigated. 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 cyclic codes of length p^s over $\mathcal{R}$, and obtain the number of codewords in each of those cyclic codes. Finally, an one-to-one correspondence between cyclic and γ-constacyclic codes of length p^s over $\mathcal{R}$ is constructed via a ring isomorphism, that carries over the results about cyclic codes correspondingly to γ-constacyclic codes of length p^s over $\mathcal{R}$. (Received January 26, 2010)