1052-11-157   **Qingquan Wu*** (`quwu@ucalgary.ca`), 2500 University DR NW, Department of Math & Stat, University of Calgary, Calgary, AB T2N 1N4, Canada. *Explicit Construction of Integral Bases of Radical Function Fields.*

A construction to find an integral basis for a radical function field of equation $y^n = D$ (such that the characteristic does not divide n) is described, where the basis is given explicitly in terms of the squarefree factorization of D. Moreover, the P-signatures for such a function field are analyzed, and it is discussed when the signature can be written down knowing a few easily computable invariants of the function field.

These results are of interest for two reasons: First, radical function fields are a wide class of function fields. Second, explicit formulae giving a nice integral basis are important for many algorithms for function fields. In particular, the property that these bases are nicely constructed allows optimizations resulting in speed-ups. (Received August 26, 2009)