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**Reinhard Piltner\*** (rpiltner@georgiasouthern.edu), Department of Mathematical Sciences, Georgia Southern University, Statesboro, GA 30460-8093, and **Lixin Li** (lli@georgiasouthern.edu), Department of Computer Sciences, Georgia Southern University, Statesboro, GA 30460-7997. *Mixed-enhanced quadrilateral finite elements with Wachspress-type functions.*

Simo and Rifai introduced the method of “enhanced strains” in 1990. Since then the method became quite popular to improve the performance of low order finite elements. The method has been used for both linear and non-linear problems by several researchers. Piltner and Taylor discussed an alternative to the original enhanced strain concept. In the alternative version of the enhanced strain method, a modified Hu-Washizu variational formulation is used. Stresses, strains, and enhanced strains are assumed in addition to the displacements. Previously, bilinear displacement shape functions assumed in a mapped bi-unit square have been used. For the current research Wachspress-type rational functions are utilized for the displacements. A special feature of the Wachspress rational functions is that they are linear on the finite element boundary between two neighboring corner nodes. Additionally, orthogonal stress and strain functions are used in the mixed formulation. This eliminates the problem of time consuming numerical inversions of matrices at the element level. The performance of the enhanced elements will be illustrated in a series of test examples. (Received August 19, 2011)