1046-12-278   **Pamela Kosick*** (`kosick@math.udel.edu`) and **Robert S Coulter**. *Commutative semifields via Dembowski-Ostrom polynomials.*

A finite semifield R is a non-associative division ring. Finite commutative semifields of odd order are in a one-to-one correspondence with planar Dembowski-Ostrom (DO) polynomials over finite fields as their multiplication gives rise to a planar DO polynomial and every planar DO polynomial gives rise to a finite commutative semifield. Our research centers around the form of the planar DO polynomials, and using this to find and discriminate between new examples. (Received September 14, 2008)