Meeting: 1004, Bowling Green, Kentucky, SS 11A, Special Session on Commutative Ring Theory

1004-13-37 **David E. Dobbs*** (dobbs@math.utk.edu), Department of Mathematics, University of Tennessee, Knoxville, TN 37996-1300, and **Brian C. Irick**, Department of Mathematics, University of Tennessee, Knoxville, TN 37996-1300. *The Frattini subsemigroup of the multiplicative monoid of a finite special pricipal ideal ring.*

The Frattini subsemigroup of a finite semigroup S is introduced as the intersection of the maximal subsemigroups of S and is characterized, in case S is finite with more than one element, as the set of all the semigroup-theoretic nongenerators of S. As an application, the Frattini subsemigroup of the multiplicative monoid of a finite special principal ideal ring (SPIR) (R, M) which is not a field is computed as the disjoint union of M^2 and the Frattini subgroup of the group $U(R)$ of units of R. In case R is a finite field, then the Frattini subsemigroup of the multiplicative monoid of R is either empty or the Frattini subgroup of $U(R)$, according as to whether R has 2 or more than 2 elements. We also develop some related results on the power-joined equivalence classes of the multiplicative monoid of any finite commutative ring. (Received January 08, 2005)