Semicentral Idempotents in the Multiplication Ring of a Centrally Closed Prime Ring

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Abstract: Let R be a ring and let $M(R)$ stand for the multiplication ring of R. An idempotent E in $M(R)$ is called left semicentral if its range $E(R)$ is a right ideal of R. In the case that R is prime and centrally closed we give a description of the left semicentral idempotents in $M(R)$. As an application we prove that, if, in addition, $M(R)$ is Baer (respectively, regular or Rickart), then R is Baer (respectively, regular or Rickart). Similar results for $*$-rings are also proved.

Key words: Prime ring, extended centroid, multiplication ring, semicentral idempotent, Baer ring.

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