NEW CRITERIA FOR A RING TO HAVE A SEMISIMPLE LEFT QUOTIENT RING

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Abstract: Goldie's Theorem (1960), which is one of the most important result in Ring Theory, is a criterion for a ring to have a semisimple left quotient ring (i.e. a semisimple left ring of fractions). The aim of my talk is to give four new criteria (using a completely different approach and new ideas). The first one is based on the recent fact that for an arbitrary ring R the set of maximal left denominator sets of R is a non-empty set.

The Second Criterion is given via the minimal primes of R and goes further then the First one and Goldie's Theorem in the sense that it describes explicitly the maximal left denominator sets via the minimal primes of R. The Third Criterion is close to Goldie's Criterion but it is easier to check in applications (basically, it reduces Goldie's Theorem to the prime case). The Fourth Criterion is given via certain left denominator sets.