Algebras of reduced E-Fountain semigroups - generalizing the right ample identity

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In this talk, we consider the class of reduced E-Fountain semigroups introduced by Lawson as "reduced E-semiabundant semigroups" and known in the literature also as "DR semigroups".

We introduce a weak form of the right ample identity which can hold in a reduced E-Fountain semigroup whose set E of idempotents is not a subsemilattice.

With some assumptions, we show that if a finite reduced E-Fountain semigroup S has an associated category C and it satisfies our weak identity, then the algebras of S and C (over any commutative unital ring) are isomorphic. In a sense, we show that the category C is a "discrete" Pierce decomposition of the semigroup S.

This gives a unified generalization for previous results on right restriction E-Ehresmann semigroups and the Catalan monoid.

If time allows, we will look in greater depth at some examples and at the relationship between Fountain theory and semigroup algebras.