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THE SPACE OF MAXIMAL SUBRINGS

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Abstract. Let R be a commutative ring and $X = RgMax(R)$ be the set of all maximal subrings of R. We give a topology on X by putting

$$\mathbb{X}(S) = \{T \in X \mid S \subseteq T\},$$

here S ranges over all subrings of R, as a subbase for closed subsets for X. We investigate the decomposition into irreducible components for this topology. It is shown that valuation domains behave similar to prime ideals in Zariski topology in our topology. Further we present an analogous form of the Prime Avoidance Lemma for valuation domains instead of prime ideals. The compactness of $\mathbb{X}(S)$ for certain subrings S of R is determined. Moreover, we characterize fields E for which the space $X = RgMax(E)$ is compact.

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