## **Integral Domains and Their Algebras: Topological Aspects**

Authors : Shai Sarussi

**Abstract :** Let S be an integral domain with field of fractions F and let A be an F-algebra. An S-subalgebra R of A is called Snice if R∩ F = S and the localization of R with respect to  $S \setminus \{0\}$  is A. Denoting by W the set of all S-nice subalgebras of A, and defining a notion of open sets on W, one can view W as a T0-Alexandroff space. Thus, the algebraic structure of W can be viewed from the point of view of topology. It is shown that every nonempty open subset of W has a maximal element in it, which is also a maximal element of W. Moreover, a supremum of an irreducible subset of W always exists. As a notable connection with valuation theory, one considers the case in which S is a valuation domain and A is an algebraic field extension of F; if S is indecomposed in A, then W is an irreducible topological space, and W contains a greatest element.

Keywords : integral domains, Alexandroff topology, prime spectrum of a ring, valuation domains

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