Title:	On the compositum of integral closures of valuation rings
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Abstract:	It is well known that if K1,K2 are algebraic number fields with coprime discriminants, then the composite ring AK1AK2 is integrally closed and K1,K2 are linearly disjoint over the field of rationals, AKi being the ring of algebraic integers of Ki. In an attempt to prove the converse of the above result, in this paper we prove that if K1,K2 are finite separable extensions of a valued field (K,v) of arbitrary rank which are linearly disjoint over K=K1∩K2 and if the integral closure Si of the valuation ring Rv of v in Ki is a free Rv-module for i=1,2 with S1S2 integrally closed, then the discriminant of either S1/Rv or of S2/Rv is the unit ideal. We quickly deduce from this result that for algebraic number fields K1,K2 linearly disjoint over K=K1∩K2 for which AK1AK2 is integrally closed, the relative discriminants of K1/K and K2/K must be coprime.
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