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Ideal independence, free sequences, and the ultrafilter number

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Abstract: We make use of a forcing technique for extending Boolean algebras. The same type of forcing was employed in Baumgartner J.E., Komjáth P., *Boolean algebras in which every chain and antichain is countable*, Fund. Math. **111** (1981), 125–133, Koszmider P., *Forcing minimal extensions of Boolean algebras*, Trans. Amer. Math. Soc. **351** (1999), no. 8, 3073–3117, and elsewhere. Using and modifying a lemma of Koszmider, and using CH, we obtain an atomless BA, A such that $\mathfrak{f}(A) = \mathfrak{s}_{\mathrm{mm}}(A) < \mathfrak{u}(A)$, answering questions raised by Monk J.D., *Maximal irredundance and maximal ideal independence in Boolean algebras*, J. Symbolic Logic **73** (2008), no. 1, 261–275, and Monk J.D., *Maximal free sequences in a Boolean algebra*, Comment. Math. Univ. Carolin. **52** (2011), no. 4, 593–610.

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