

COMBINATORICS
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Set families with a forbidden induced subposet

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Abstract: Sperner's theorem asserts that the largest antichain in a Boolean lattice B_n has size $\binom{n}{\lfloor n/2 \rfloor}$. A few years ago, Bukh obtained a substantial asymptotic extension of Sperner's theorem by proving that for any poset H whose Hasse diagram is a tree of height k , the largest size of a subfamily of B_n not containing H is asymptotic to $(k-1)\binom{n}{\lfloor n/2 \rfloor}$. We establish an induced version of Bukh's result, namely that the largest size of a subfamily of B_n not containing H as an induced subposet, is also asymptotic to $(k-1)\binom{n}{\lfloor n/2 \rfloor}$. This is an old result (2012). I will focus on presenting the ideas of the proof. This is joint work with Ed Boehlein.

Friday, 15 November, 2013
Mathematics & Science Center W306

MATHEMATICS AND COMPUTER SCIENCE
EMORY UNIVERSITY