

Improved bounds on the partitioning of the Boolean lattice into chains of equal size

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The Boolean lattice $2^{[n]}$ is the power set of $[n] = \{1, \dots, n\}$ ordered by inclusion. We prove that if $n > 500c^2$ then $2^{[n]}$ can be partitioned into chains, with at most one exception each of length c . This improves a theorem of Lonc on the conjecture of Griggs. We also show that given a positive integer c and a poset P , whose Hasse diagram is connected then there exists $N(P, c)$ such that if $n > N(P, c)$ then the cartesian power P^n can be partitioned into chains, with at most one exception each of length c .