

Almost disjoint families of dense subsets of the rationals

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In [1], J. Steprans started the study of the almost disjointness number of the boolean algebra $\mathcal{P}(\mathbb{Q})/\text{nwd}$, where nwd is the ideal of nowhere dense subsets of the rational numbers. This cardinal invariant, denoted by $\mathfrak{a}(\mathcal{P}(\mathbb{Q})/\text{nwd})$, is defined as the minimal possible cardinality of an uncountable maximal antichain on $\mathcal{P}(\mathbb{Q})/\text{nwd}$. Among other things, he proved that the pseudointersection number \mathfrak{p} is a lower bound for $\mathfrak{a}(\mathcal{P}(\mathbb{Q})/\text{nwd})$, and that in the Laver's model it holds $\mathfrak{a}(\mathcal{P}(\mathbb{Q})/\text{nwd}) = \omega_1$. In this talk we present some improvements of these results as well as additional related facts about uncountable almost disjoint families of the boolean algebra $\mathcal{P}(\mathbb{Q})/\text{nwd}$.

[1] Steprans J. The almost disjointness cardinal invariant in the quotient algebra of the rationals modulo the nowhere dense subsets. *Real Anal Exchange*, 2001/2002, 27: 795–800.