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Dilworth's Theorem for Borel Posets

A famous theorem of Dilworth asserts that any finite poset of width k can be decomposed into k chains. We study the following problem: given a Borel poset P of finite width k , is it true that it can be decomposed into k Borel chains? We give a positive answer in a special case of Borel posets embeddable into the real line. We also prove a dual theorem for posets whose comparability graphs are locally countable. This is joint work with Jarosław Grytczuk and Zbigniew Lonc.