Boolean dimension and tree-width

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The dimension of a partially ordered set P is an extensively studied parameter. Small dimension allows succinct encoding. Indeed if P has dimension d, then to know whether $x < y$ in P it is enough to check whether $x < y$ in each of the d linear extensions of a witnessing realizer. Focusing on the encoding aspect Nešetřil and Pudlák defined the boolean dimension so that P has boolean dimension at most d if it is possible to decide whether $x < y$ in P by looking at the relative position of x and y in only d permutations of the elements of P. The main result presented in this talk is that posets with cover graphs of bounded tree-width have bounded boolean dimension. This stays in contrast with the fact that there are posets with cover graphs of tree-width three and arbitrarily large dimension.