

First fit algorithm for on-line chain partitioning problem

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On-line chain partitioning of orders can be viewed as the game between two-person between: Algorithm and Spoiler. The game is played in rounds. During each round Spoiler introduces a new point of an order with its comparability status to previously presented points while Algorithm gives it a color in such a way that the points with the same color form a chain. We consider the First Fit Algorithm (FFA) - it gives the first possible color to each introduced point. There is a relatively easy strategy for a Spoiler that forces FFA to use arbitrary many colors even on orders of width 2. We proved that if the game is played on orders of width w that do not contain $k+k$ (two incomparable chains of height k) as subposet then FFA uses no more than $4kw^2$ colors.

Joint work with Bartłomiej Bosek, Edward Szczyпка.