

Title: Forbidden Subposets for Fractional Weak Discrepancy at Most k

Jeong Ok Choi, Department of Mathematics, Furman University

The *fractional weak discrepancy* of a poset (partially ordered set) P , written $\text{wd}(P)$, is the least k such that some $f: P \rightarrow \mathbb{R}$ satisfies $f(y) - f(x) \geq 1$ for $x \prec y$ and $|f(y) - f(x)| \leq k$ for $x \parallel y$. Minimal forbidden subposets are often called *obstructions*. Shuchat, Shull, and Trenk determined the obstructions for the property $\text{wd}(P) < 1$: the obstructions are $\mathbf{2} + \mathbf{2}$ and $\mathbf{3} + \mathbf{1}$. We determine the obstructions for the property $\text{wd}(P) \leq k$ when k is an integer. The complete collection of the obstructions for $\text{wd}(P) \leq k$ for each $k \geq 2$ is an infinite set. This is joint work with Douglas B. West.