Forbidden characterization of the fractional weak discrepancy of posets.

For a finite poset $P = (X, \prec)$ the fractional weak discrepancy (denoted by $wd_F(P)$) is defined as the minimum value $t$ for which there is a function $f : X \to \mathbb{R}$ such that (1) $f(x) + 1 \leq f(y)$ whenever $x \prec y$ and (2) $|f(x) - f(y)| \leq t$ whenever $x \parallel y$ in $P$. It is known that $wd_F(P) < 1$ if and only if $P$ is a semiorder. In other words, using a forbidden characterization of semiorders $wd_F(P) < 1$ if and only if $P$ does not contain either $2 + 2$ or $1 + 3$ as its subposet. In this talk, for every nonnegative integer $m$ we will provide a family of forbidden subposets of $P$ as an equivalent condition of being that $wd_F(P) < m$. (Received September 20, 2007)