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Virtual specialness without hyperbolicity

We are interested in determining when a nonpositively curved cube complex X has a finite special cover, without assuming that $\pi_1 X$ is word-hyperbolic. Typical counterexamples are irreducible lattices acting on products of trees. In the Bass-Serre trees of such examples, one can find an infinite ascending chain of subtrees such that their pointwise stabilizers become smaller and smaller. We define a notion called "finite generalized height" that excludes such pathologies, and we prove that any graph of non-positively curved cube complexes having hyperbolic vertex groups and finite generalized height is virtually special. This is joint work with D. Wise.