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*Two-player infinite games on posets*

Fix a subset of reals  $S$ . Alice and Bob take turns picking real numbers, with the only restriction that they must pick strictly between the previous two selected reals. Alice wins Baker's Game if she can legally pick an element of  $S$  after the game is over. Bob wins if he can prevent this.

If  $S$  is countable, then Bob has a winning strategy. (This is a game-theoretic proof that the reals are uncountable.) Matt Baker asked if the converse is true. Recently, Brian and Clontz used elementary submodels to give a positive answer to this question.

In this talk, we will present some variations of Baker's Game and recent contributions. We mainly discuss generalizations for which having winning strategies characterizes interesting properties of the posets on which the game is played. We also mention connections to Banach-Mazur, Hausdorff gaps, the perfect set property, partition problems, and some nice open questions.

This is joint work with Luciano Salvetti.