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Winning Strategy for Multiplayer and Multialliance Zeckendorf Games, Fibonacci Quart. **59** (2021), no. 4, 308–318.

Abstract

Edouard Zeckendorf [5] proved that every positive integer n can be uniquely written as the sum of nonadjacent Fibonacci numbers, known as the Zeckendorf decomposition. Based on Zeckendorf's decomposition, we have the Zeckendorf game for multiple players. We show that when the Zeckendorf game has at least three players, none of the players have a winning strategy for $n \geq 5$. Then we extend the multiplayer game to the multialliance game, finding some interesting situations in which no alliance has a winning strategy. This includes the two-alliance game, and some cases in which one alliance always has a winning strategy.