The $\alpha - \Omega$ Game

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Bulgarian Solitaire is a game introduced by Martin Gardner. One or more piles of coins are on a table. A single player, Ω removes one coin from each pile and uses the removed coins to make a new pile. If the total number of coins is $n = \binom{k}{2}$, then eventually the stable triangular configuration with piles of sizes $1, 2, 3, \cdots, k$ is reached. The $\alpha - \Omega$ game involves a second player α. Before each move by Ω, α must change the configuration by removing coins from one or more piles and using the removed coins to make a new pile. α loses if the position which results has two piles with sizes which differ by one and also loses if the position then left by Ω has two piles with sizes which differ by one. We explore when α can avoid losing, and how.

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