

Cash Nim on three Piles

W.H. Chan*, H.Y. Lau, The Hong Kong Institute of Education

Richard M. Low, San Jose State University

G. Nong, Sun Yat-Sen University

Perhaps the most famous combinatorial game is Nim, which was completely analyzed by Bouton in 1902. Since then, the game of Nim has been the subject of many research papers. Nowakowski and Albert asked, in 2002, the following question: Cash Nim is Nim played with \$1 coins. At the beginning of the game, there are n coins distributed in k piles. The winner receives \$10 n , the loser gets to keep all of the coins that he has removed from the piles. What is the maximum payoff the loser can guarantee for himself? We are investigating the answer to this question of the games on three piles.

Keywords: Nim, Cash Nim, maximum payoff