Abstract

In this thesis we will study a class of impartial games called octal games. One can think informally of such games as a pile of tokens from which each of 2 players alternatingly takes away some number of tokens with every move. Some moves also allow the leftover tokens in the pile to be split up into 2 new piles. The player who cannot take away any more tokens loses.

For any impartial game, in particular any octal game, we can attribute a Grundy-value. These values tell us, roughly speaking, who is winning the game. They are also much easier to compute than a "brute-force" approach. The Grundy-values of an octal game can be conveniently recorded by a nim-sequence. It is conjectured that for all octal games, the corresponding nim-sequence is ultimately periodic. For several octal games, this has already been proven to be true. However, there still remains several octal games where it is still unknown whether or not the nim-sequence will be ultimately periodic.