

## Wythoff sequences and partizan subtraction games

Some of the most well-known combinatorial games go by the name Nim. In 1902, Bouton solved the standard form of Nim: from the given heaps of tokens, players alternate turns in which they remove some positive number of tokens from exactly one heap; the first player unable to move loses. Such a game is in the family of subtraction games (see Guy and Smith, 1956; and Fraenkel and Kotzig, 1987). In a subtraction game, the players may only remove  $n$  tokens from a heap if  $n$  is in the given subtraction set.

Whereas subtraction games as defined above are impartial games, subtraction games can be generalized to partizan games, in which the two players have different (finite) subtraction sets (Plambeck, 1995). In this talk, we present partizan subtraction where the subtraction sets are the elements of the upper and lower Wythoff sequences. As these sequences are infinite, mutually disjoint, and non-periodic we see much different behaviour than in earlier investigations of subtraction games.

This work is joint with U. Larsson (Chalmers), R.J. Nowakowski (Dal), and A.A. Siegel (Dal).