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Elizabeth J. Kupin* (ekupin@math.rutgers.edu). *Subtraction-Division Games, Patterns, and Self-similarity.*

This talk will investigate a class of two-player combinatorial games with parameters a , b , and n . The game starts at n , and is a race to say the number 1. Each player on his or her turn can either subtract a from the current number, or divide the current number by b and round up.

Each game has a Sprague-Grundy value associated to it, that among other things indicates whether or not that game is a first player win. We look at sequences of these values for fixed pairs of a and b . While these sequences are not periodic, for many pairs of a and b there are interesting and beautiful patterns that appear. By showing that many of these sequences fit into the category of k -automatic sequences, we will also be able to answer the following more practical question: is there a simple formula for which player wins? (Received September 14, 2011)