NEIL MCKAY, Dalhousie University

How to know if you are playing a sum of Hackenbush strings

Nimbers and numbers are independently important in the development of the theory of normal-play combinatorial games. Hackenbush is a well-known ruleset that unites nimbers (as values of Green Hackenbush trees) and numbers (as values of Red-Blue Hackenbush trees). Nimbers and numbers are both closed under disjunctive sum and ordinal sum so such trees are in fact equal to strings (paths). It is easy to recognize either type given a position in canonical form. In practice it is easy to determine if a ruleset has values that are only nimbers or only numbers.

We show how to recognize Red-Blue-Green Hackenbush strings and any sum of Red-Blue-Green Hackenbush strings, thus recognizing all uptimals, sums of Hackenbush flowers, and more.