What is FRACTRAN?

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Abstract

FRACTRAN is a Turing-complete programming language introduced by John H. Conway in 1972, and later formalized in 1987. FRACTRAN programs are lists of positive fractions plus a positive integer seed. In this talk I will explain how FRACTRAN works and give examples of various programs, and also show how it can be used to prove the undecidability of the generalized Collatz problem, the original motivation for Conway's invention.