Fractional 0–1 Programming: Applications, Complexity, Algorithms and Recent Advances

Oleg Prokopyev
University of Pittsburg, USA and HSE NN

https://www.pitt.edu/ droleg/

Abstract

We overview a class of nonlinear integer optimization problems commonly known as fractional 0–1 programming problems (also, often referred to as hyperbolic 0–1 programming problems), where the objective is to optimize the sum of ratios of affine functions subject to a set of linear constraints. Such problems arise in diverse applications across different fields, and have been the subject of study in a number of papers during the past few decades. We overview the literature on fractional 0–1 programs including their applications, related computational complexity issues and solution methods including exact, approximation and heuristic algorithms.