

Cost shares and approximation algorithms for network design problems

Lisa Fleischer
lkf@watson.ibm.com
IBM T. J. Watson Research Center
P.O.Box 218
Yorktown Heights, NY 10598
USA

Abstract

Cost shares are a well-known concept from the realm of mechanism design. Recently, cost shares have also proved to be a useful tool in analyzing approximation algorithms for various network design problems. We build on this work by introducing very simple cost shares for Steiner forest problems, derived from primal-dual approximation algorithms. The result is simpler analyses and better approximation guarantees for two interesting network design problems, one modeling economies of scale (multicommodity rent-or-buy), the second modeling uncertainties in demand (stochastic Steiner tree). In this talk, I'll review the most relevant previous work and then discuss our new results.

This is joint work with Jochen Konemann, Stefano Leonardi, and Guido Schaefer.