

Robust optimization is a valuable alternative to stochastic programming, where all underlying probabilistic structures are replaced by the so-called uncertainty sets and all related conditions must be satisfied under all circumstances. This thesis reviews the fundamental aspects of robust optimization and discusses the most common types of problems as well as different choices of uncertainty sets. It focuses mainly on polyhedral and elliptical uncertainty and for the latter, in the case of linear, quadratic, semidefinite or discrete programming, computationally tractable equivalents are formulated. The final part of this thesis then deals with the well-known Flower-girl problem. First, using the principles of robust methodology, a basis for the construction of the robust counterpart is provided, then multiple versions of computationally tractable equivalents are formulated, tested and compared.