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Mixed-integer nonlinear optimization 5 x 1 x 2 ( $x_1, x_2$ )  $\eta$  Figure 1.2.

Small MINLP to illustrate

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the need for a linear objective function. The solution of the continuous relaxation is  $x = 1/2, \dots, 1/2$ , which is not an extreme point of the feasible set and, in fact, lies in the strict interior of the MINLP: see Figure 1.2. Because the continuous minimizer lies in the

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Mixed integer nonlinear programming (MINLP) refers to optimization problems with continuous and discrete variables and nonlinear functions in the objective function and/or the constraints. MINLPs arise in applications in a wide range of fields, including chemical engineering, finance, and manufacturing. The general

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models which their solutions can be considered as appropriate estimators when the outliers and multicollinearity simultaneously appear in the data set.

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expressions and integer variables. Mixed integer nonlinear programming problems are in general more difficult to solve than mixed integer programming problems and nonlinear programming problems. Benefits of using AIMMS for Mixed Integer Nonlinear Programming

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variables are restricted to be integers. In many settings the term refers to integer linear programming (ILP), in which the objective function and the constraints (other than the integer constraints) are linear.. Integer programming is NP-complete.

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