MINLP Summer School 2016
Sevilla

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Mixed Integer Nonlinear Programming: Theory, Algorithms, and Applications

Exercise sheet 3

Different Solvers – Different Algorithms

Exercise 1.

Are you done with implementing your model for the network congestions problem? If not, then please do so.

a) Show you formulated a convex MINLP (hopefully you did!)

b) Different solvers can have very different behaviours. Solve your model trying these solvers:

- BARON (`option minlp = baron`)
- SCIP (`option minlp = scip`)
- ANTIGONE (`option minlp = antigone`)
- SBB (`option minlp = sbb`)
- DICOPT (`option minlp = dicopt`)

Can you tell from the output which algorithms they are applying?

You will find additional solvers and information on the GAMS website

`https://www.gams.com/help/topic/gams.doc/solvers/index.html`

Exercise 2.

The solver BONMIN solves convex MINLP to global optimality and nonconvex MINLP to local optimality. For this, BONMIN implements a variety of algorithms. The different algorithms are described on the GAMS homepage

`https://www.gams.com/help/topic/gams.doc/solvers/bonmin/index.html`,

where you also find instructions on how to set the parameter.

a) Go again through the slides from the lecture and find out which BONMIN parameter represents which algorithm.

b) Solve the network planning model with different parameters and note the differences you observe.