

NEOS Results for Job #13773542

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Date: Wednesday, January 17, 2024 at 04:52 PM CST

Executed on prod-exec-5.neos-server.org  
GAMS 44.4.0 06604687 Sep 19, 2023 LEX-LEG x86 64bit/Linux - 01/17/24 16:52:57 Page 1  
General Algebraic Modeling System  
Compilation

COMPILATION TIME = 0.002 SECONDS 2 MB 44.4.0 06604687 LEX-LEG  
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General Algebraic Modeling System  
Range Statistics SOLVE Optimization\_Approach\_to\_Sensitivity\_Analysis\_Model\_A1 Using NLP From line 342

RANGE STATISTICS (ABSOLUTE NON-ZERO FINITE VALUES)

RHS [min, max] : [ 8.289E-02, 1.000E+00] - Zero values observed as well  
Bound [min, max] : [ NA, NA] - Zero values observed as well  
Matrix [min, max] : [ 3.700E-02, 2.000E+00]

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General Algebraic Modeling System  
Model Statistics SOLVE Optimization\_Approach\_to\_Sensitivity\_Analysis\_Model\_A1 Using NLP From line 342

MODEL STATISTICS

BLOCKS OF EQUATIONS	26	SINGLE EQUATIONS	26
BLOCKS OF VARIABLES	29	SINGLE VARIABLES	29
NON ZERO ELEMENTS	77	NON LINEAR N-Z	5
CODE LENGTH	40	CONSTANT POOL	16

GENERATION TIME = 0.018 SECONDS 3 MB 44.4.0 06604687 LEX-LEG  
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## General Algebraic Modeling System

Solution Report SOLVE Optimization\_Approach\_to\_Sensitivity\_Analysis\_Model\_A1 Using NLP From line 342

## SOLVE SUMMARY

MODEL Optimization\_Approach\_to\_Sensitivity\_Analysis\_Model\_A1  
 OBJECTIVE Z  
 TYPE NLP  
 DIRECTION MINIMIZE  
 SOLVER BARON  
 FROM LINE 342

\*\*\* SOLVER STATUS 1 Normal Completion  
 \*\*\* MODEL STATUS 2 Locally Optimal  
 \*\*\* OBJECTIVE VALUE 0.3395

RESOURCE USAGE, LIMIT 0.190 10000000000.000  
 ITERATION COUNT, LIMIT 0 2147483647  
 EVALUATION ERRORS 0 0

GAMS/BARON 44.4.0 06604687 Sep 19, 2023 LEG x86 64bit/Linux

BARON is a product of The Optimization Firm, LLC. <http://www.minlp.com/>  
 Parts of the BARON software were created at the  
 University of Illinois at Urbana-Champaign.

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BARON version 23.6.22. Built: LNX-64 Thu Jun 22 20:08:45 EDT 2023

BARON is a product of The Optimization Firm.  
 For information on BARON, see <https://minlp.com/about-baron>

If you use this software, please cite publications from  
<https://minlp.com/baron-publications>, such as:

Khajavirad, A. and N. V. Sahinidis,  
 A hybrid LP/NLP paradigm for global optimization relaxations,  
 Mathematical Programming Computation, 10, 383-421, 2018.

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This BARON run may utilize the following subsolver(s)  
 For LP/MIP/QP: CLP/CBC, ILOG CPLEX  
 For NLP: MINOS, SNOPT, External NLP, IPOPT, FILTERSQP

Solution = 0.339540790251073 best solution found during preprocessing

Best possible = 0.339506839567

Absolute gap = 3.39506840726367E-5 optca = 1E-9

Relative gap = 9.99900013413173E-5 optcr = 0.0001

# LOWER LEVEL UPPER MARGINAL

---- EQU EQ001	0.083	0.083	0.083	.
---- EQU EQ002	0.220	0.220	0.220	.
---- EQU EQ003	0.208	0.208	0.208	.
---- EQU EQ004	0.130	0.130	0.130	.
---- EQU EQ005	0.160	0.160	0.160	.
---- EQU EQ006	0.200	0.200	0.200	.
---- EQU e01_1	.	-2.16E-12	.	1.000
---- EQU e01_2	.	-1.42E-12	.	1.000
---- EQU e01_3	.	-8.44E-11	.	1.000
---- EQU e01_4	.	-1.16E-11	.	1.000
---- EQU e01_5	.	-3.36E-11	.	1.000
---- EQU Equation1	.	.	.	1.000
---- EQU Objective~	.	.	.	1.000
---- EQU EQweight1	.	.	.	-1.518
---- EQU EQweight2	.	.	.	4.140
---- EQU EQweight3	.	.	.	4.323
---- EQU EQweight4	.	.	.	0.945
---- EQU EQweight5	.	.	.	2.746
---- EQU Equation2	-1.000	-1.000	-1.000	0.256
---- EQU EQ_PP1	.	.	.	.
---- EQU EQ_PP2	.	.	.	.
---- EQU EQ_PP3	.	.	.	14.072
---- EQU EQ_PP4	.	.	.	.
---- EQU EQ_PP5	.	.	.	-14.072
---- EQU EQ_PP6	.	.	.	.
---- EQU Equation01	.	.	.	-14.072

# LOWER LEVEL UPPER MARGINAL

---- VAR P1	.	0.083	+INF	.
---- VAR P2	.	0.220	+INF	.
---- VAR P3	.	0.208	+INF	.
---- VAR P4	.	0.130	+INF	.
---- VAR P5	.	0.160	+INF	.
---- VAR P6	.	0.200	+INF	.
---- VAR Z	-INF	0.340	+INF	.
---- VAR X_1	-INF	1.333	+INF	.
---- VAR X_2	-INF	0.911	+INF	.
---- VAR X_3	-INF	0.708	+INF	.

```

---- VAR X_4      -INF    0.944  +INF  .
---- VAR X_5      -INF    0.636  +INF  .
---- VAR t_1      .      0.111  +INF  .
---- VAR t_2      .      0.008  +INF  .
---- VAR t_3      .      0.085  +INF  .
---- VAR t_4      .      0.003  +INF  .
---- VAR t_5      .      0.132  +INF  .
---- VAR tt       .      0.340  +INF  .
---- VAR WW_1     .      0.585  +INF  .
---- VAR WW_2     .      0.039  +INF  .
---- VAR WW_3     .      0.096  +INF  .
---- VAR WW_4     .      0.111  +INF  .
---- VAR WW_5     .      0.169  +INF  .
---- VAR PP_1     .      0.074  +INF  .
---- VAR PP_2     .      0.258  +INF  .
---- VAR PP_3     .      0.169  +INF  .
---- VAR PP_4     .      0.133  +INF  .
---- VAR PP_5     .      0.169  +INF  .
---- VAR PP_6     .      0.197  +INF  .

```

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**** REPORT SUMMARY :    0  NONOPT
                        0  INFEASIBLE
                        0  UNBOUNDED
                        0  ERRORS

```

EXECUTION TIME = 0.308 SECONDS 3 MB 44.4.0 06604687 LEX-LEG

USER: NEOS Server License prod-exec-5.neos-server.orgS231116/0001AB-GEN  
 mac@f0:1f:af:d3:59:c4 DCE1890  
 License for teaching and research at degree granting institutions

#### \*\*\*\* FILE SUMMARY

Input /var/lib/condor/execute/dir\_20539/gamsexec/MODEL.gms  
 Output /var/lib/condor/execute/dir\_20539/gamsexec/solve.lst