

# Comparison between ASCALCG and SCALCG conjugate gradient algorithms for solving Elastic-Plastic Torsion problem from MINPACK2 collection

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In this work I present the numerical results corresponding to ASCALCG and SCALCG packages for solving Elastic-Plastic Torsion problem from MINPACK2 collection of Averick, Carter, Moré and Xue [1,2]. ASCALCG package [3] is an acceleration of SCALCG [4,5,6,7]

## 1. Elastic – Plastic Torsion

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*** ASCALCG Algorithm ***. Function: ELASTIC-PLASTIC TORSION
Powell criterion for restart. Stoptest = 1
n  iter  irs  fgcnt  lscent  time(c)      fxnew          gnorm
-----
theta spectral
40000  240    0    269    27     693  -.4392678184466E+00  .3175763152777E-04
-----

*** SCALCG Algorithm ***. Function: ELASTIC-PLASTIC TORSION
Powell criterion for restart. Stoptest = 1
n  iter  irs  fgcnt  lscent  time(c)      fxnew          gnorm
-----
theta spectral
40000  445   219   584   137     849  -.4392677543806E+00  .5891773610698E-04
-----

*** ASCALCG Algorithm ***. Function: ELASTIC-PLASTIC TORSION
Powell criterion for restart. Stoptest = 1
n  iter  irs  fgcnt  lscent  time(c)      fxnew          gnorm
-----
theta spectral
250000  590    0    618    26    11398  -.4392974732789E+00  .5618386713122E-04
-----

*** SCALCG Algorithm ***. Function: ELASTIC-PLASTIC TORSION
Powell criterion for restart. Stoptest = 1
n  iter  irs  fgcnt  lscent  time(c)      fxnew          gnorm
-----
theta spectral
250000  856   377  1127   269    11937  -.4392941926975E+00  .9778112771764E-04
-----

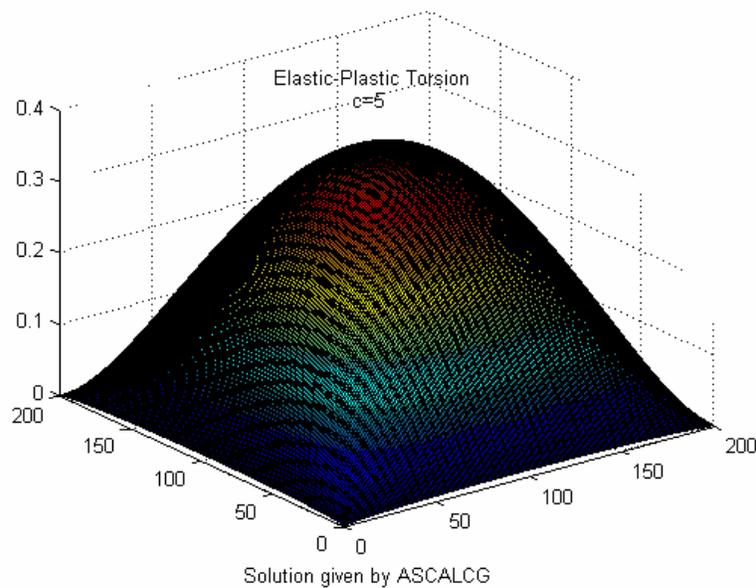
```

```

*** ASCALCG Algorithm ***. Function: ELASTIC-PLASTIC TORSION
    Powell criterion for restart.   Stoptest = 1
    n   iter   irs   fgcnt  lscent  time(c)   fxnew           gnorm
-----
theta spectral
1000000 1112     0   1144    30   88271  -.4393016851402E+00  .6317359569009E-04
-----

*** SCALCG Algorithm ***. Function: ELASTIC-PLASTIC TORSION
    Powell criterion for restart.   Stoptest = 1
    n   iter   irs   fgcnt  lscent  time(c)   fxnew           gnorm
-----
theta spectral
1000000 1257   557  1630   371  70490  -.4392784425689E+00  .2027676412762E-03
-----

```



## References

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