Subject: Broyden's method
Posted by schaa on Fri, 16 Jul 2004 18:45:26 GMT

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Hi all,

I have this set of nonlinear equations, which I try to solve with the
Broyden function, which does give me a solution.
Unfortunately, depending on the initial guess, the solution varies a
lot.

So, does someone has a clue? for example to give the best initial
guess one could possibly make, or the use of another function ...?

Thanks in advance!
-Ralf

My approach:

```
;===========================================================
PRO go_broyden
common param, V_T, V_R, P_T, P_R, psi_T, psi_R, Fdop

;Provide an initial guess as the algorithm's starting point:
X  = [0.1, 0.1, 2.0]

;Compute the solution:
result_broyden = BROYDEN(X, 'bending',CHECK=check,/DOUBLE)
END


;===========================================================
FUNCTION bending, X
common param, V_T, V_R, P_T, P_R, psi_T, psi_R, Fdop

return,[V_T*cos(X[0]) - V_R*cos(X[1]) -Fdop , $
 P_T*sin(X[0] - psi_T) + X[2] , $
   P_R*sin(X[1] - psi_R) + X[2] ]
END

 ;-----------------------------------------------------------
```
these are the parameters:
V_T   =   49.833666
V_R   =   49.837507
P_T   =   3.7233149e+008
P_R   =   5406.0310
PSI_T =   1.4213396
PSI_R =   2.0724097
FDOP =   363893.42

this is what i get:

BROYDEN:
guess: X = [0.1, 0.1, 2.0]
solution:
X[0] = 0.13057402
X[1] = 355.01434
X[2] = 5988.0183

BROYDEN:
guess: X = [0, 0, 20]
solution:
X[0] = 0.032354482
X[1] = -30.486023
X[2] = 20.179070