Bootstrap Calculations

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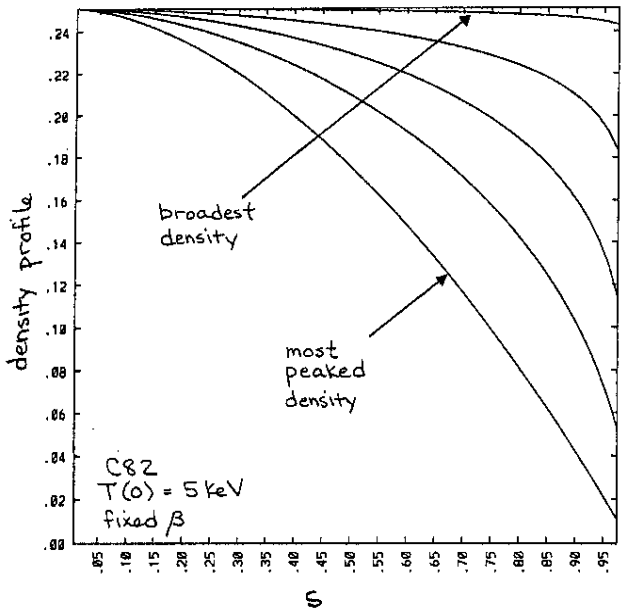
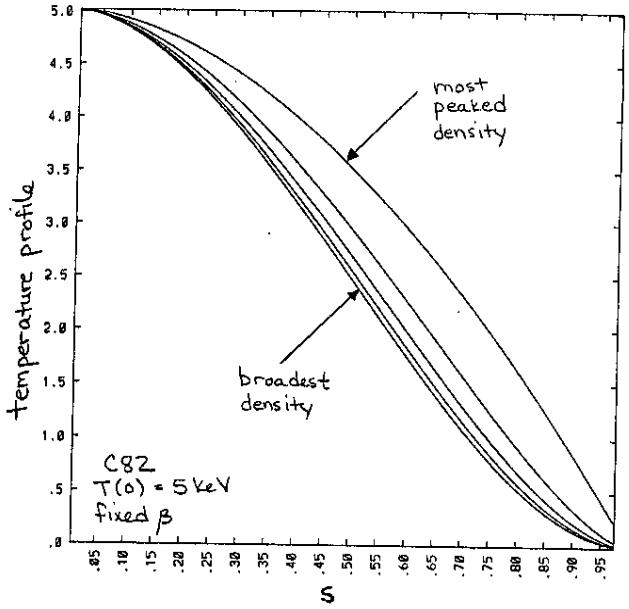
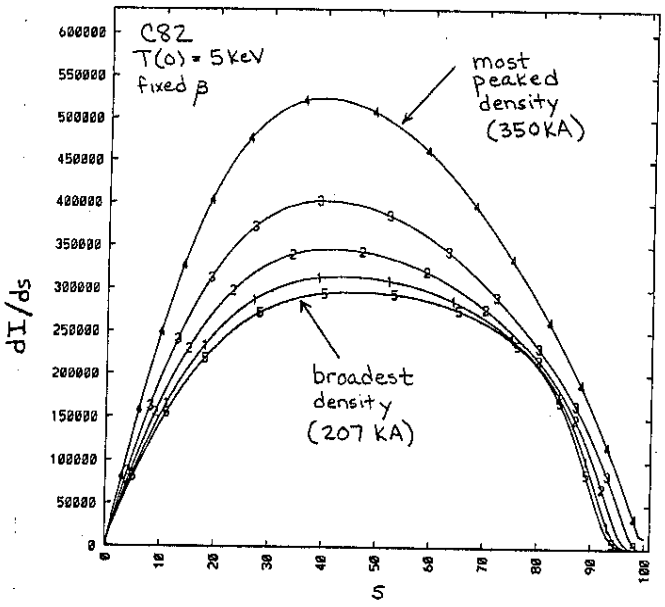
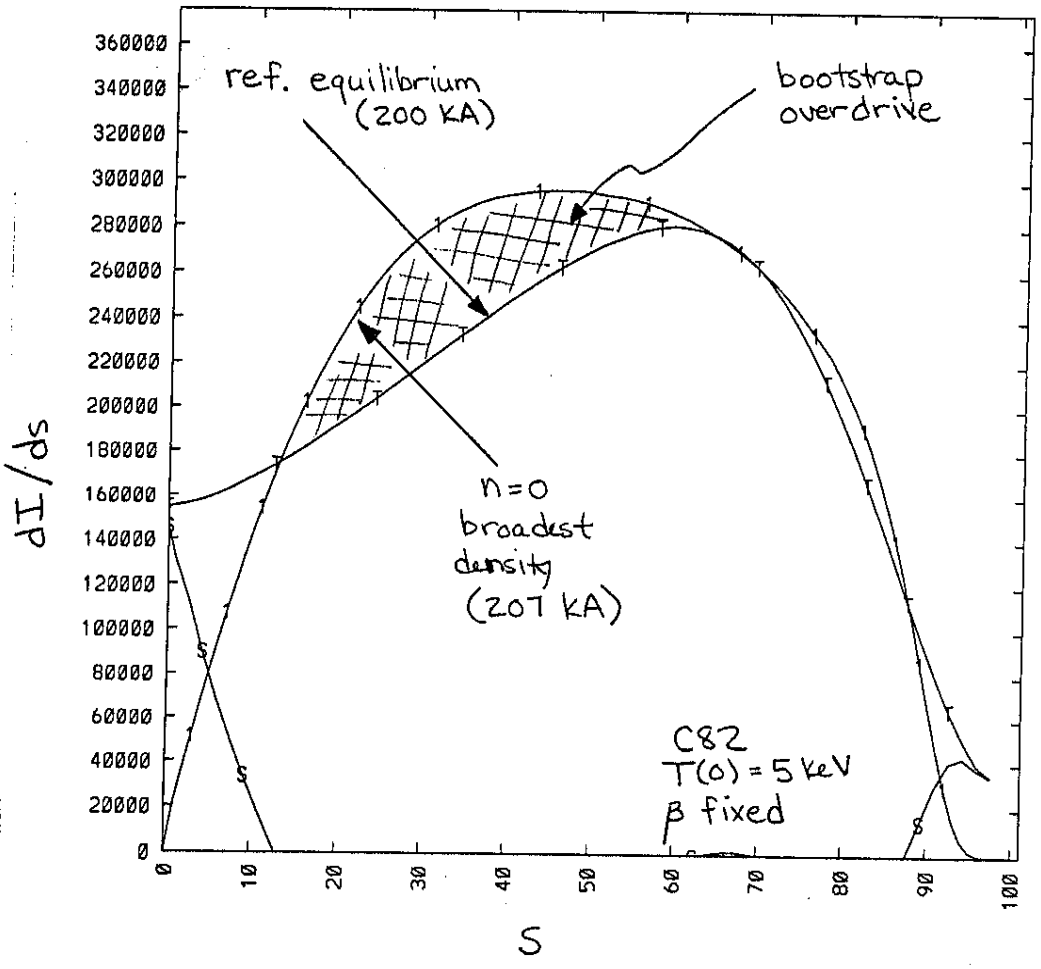
- assuming that the n=0 bootstrap predictions are correct for QAS configurations, we must now find a way to reduce I_{bs} to recover our equilibrium (C82)
  - broaden density → this works well, but we have some bootstrap current misalignment
  - increase collisionality → tend to lose too much current near plasma edge before any significant global decrease of the current
  - lower β → this is not considered an option
- examine the bootstrap current (again taking n=0 prediction as valid) with reactor-like collisonality
  - use C82 equilibrium and lower T(0) from 5 keV to 3 keV
  - this changes the factor nR/T**2 from 0.15 to 0.67

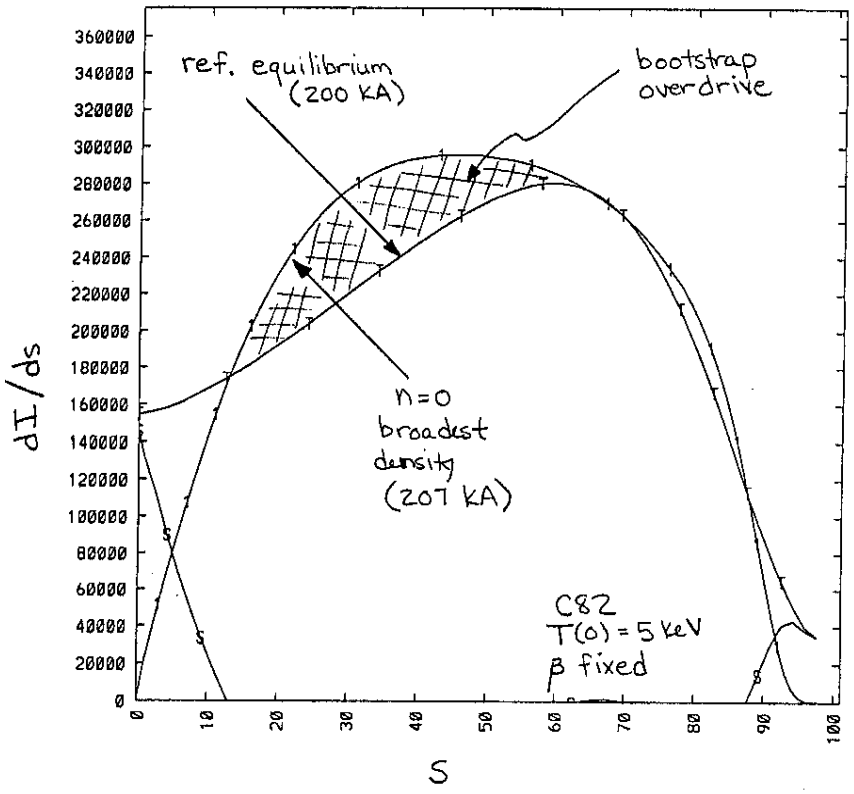

density profile
broadest density
most peaked density
C82
T(0) = 5 keV
fixed β
s


temperature profile
most peaked density
broadest density
C82
T(0) = 5 keV
fixed β
s


C82
T(0) = 5 keV
fixed β
most peaked density (350 KA)
broadest density (207 KA)
dI/ds
s


ref. equilibrium
(200 kA)
bootstrap
overdrive
n=0
broadest
density
(207 kA)
C82
T(0) = 5 keV
β fixed
dI/ds
S
360000
340000
320000
300000
280000
260000
240000
220000
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
0
10
20
30
40
50
60
70
80
90
100

$$\frac{nR}{T^2} = .145$$



reactor-like collisionality

$$\frac{nR}{T^2} = .673$$