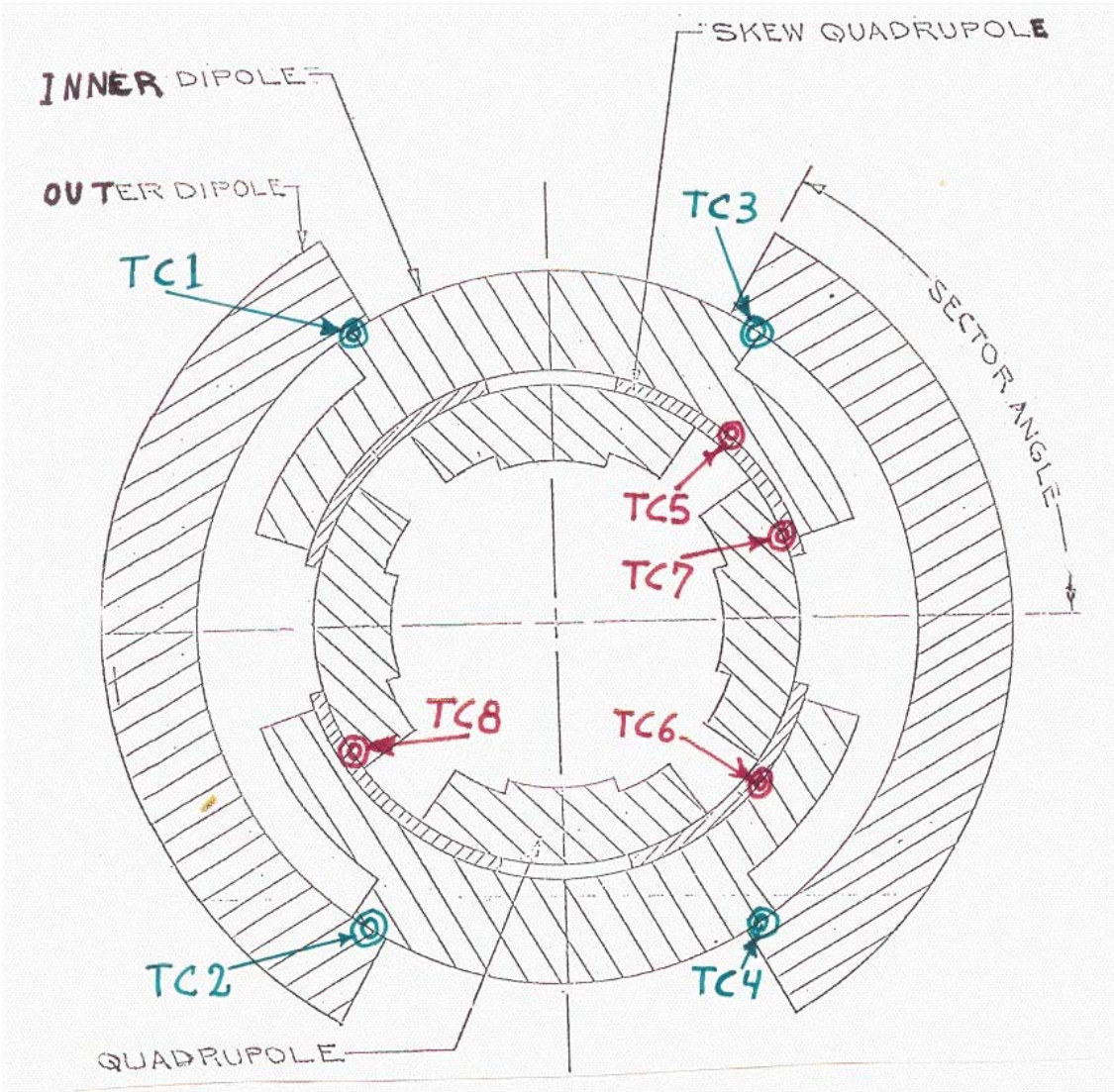
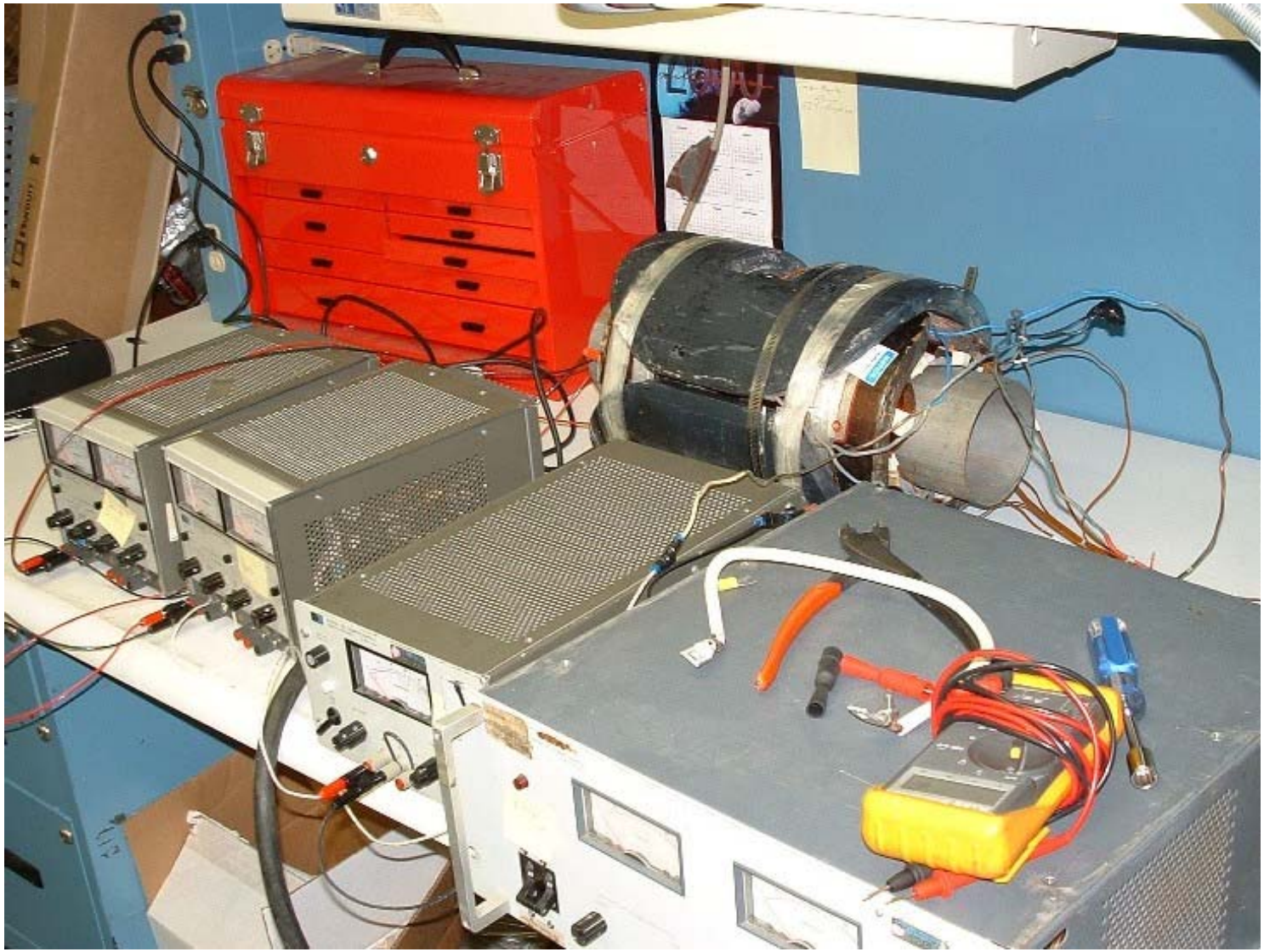
Booster Trim Magnet
Thermal and Magnetic Test

- What / How - Measurement Technique
- Examples of Measures
- Modeling
- Use of the data
- Magnetic Measurements

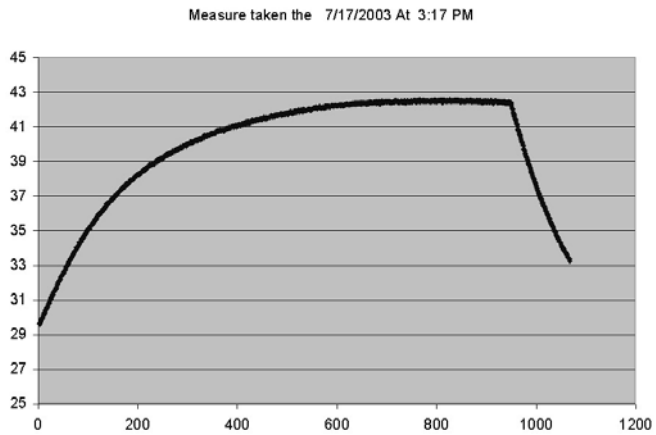
} Comparison

NOTICE

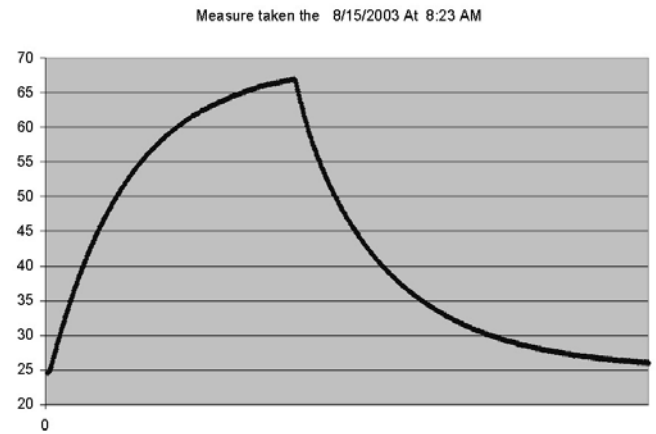

SKEW QUADRUPOLE
INNER DIPOLE
OUTER DIPOLE
TC1
TC3
SECTOR ANGLE
TC5
TC7
TC8
TC6
TC2
TC4
QUADRUPOLE



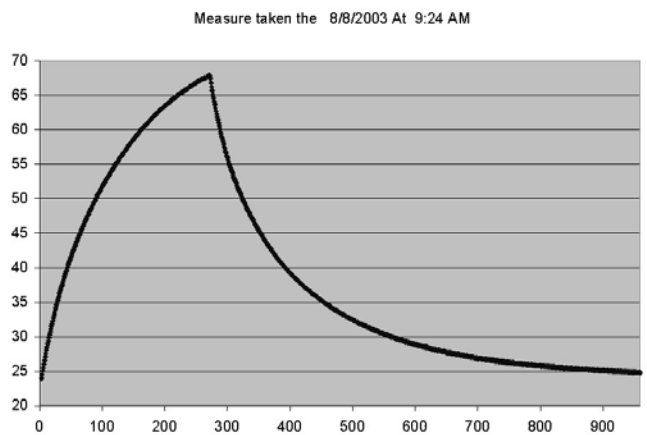
TC4 Outer Dipole @ 75%



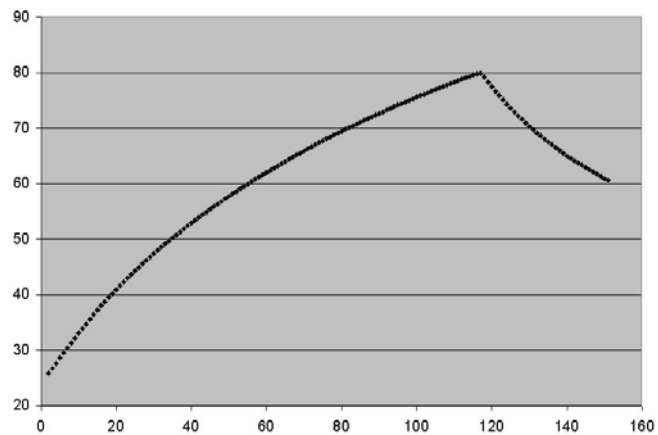
TC4 All Nominal



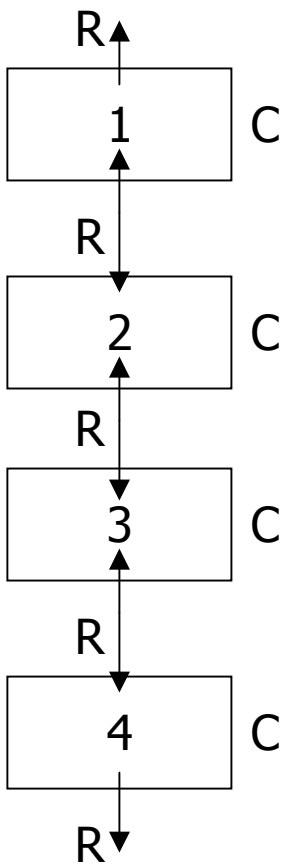
TC5 Inner Dipole @ 150%



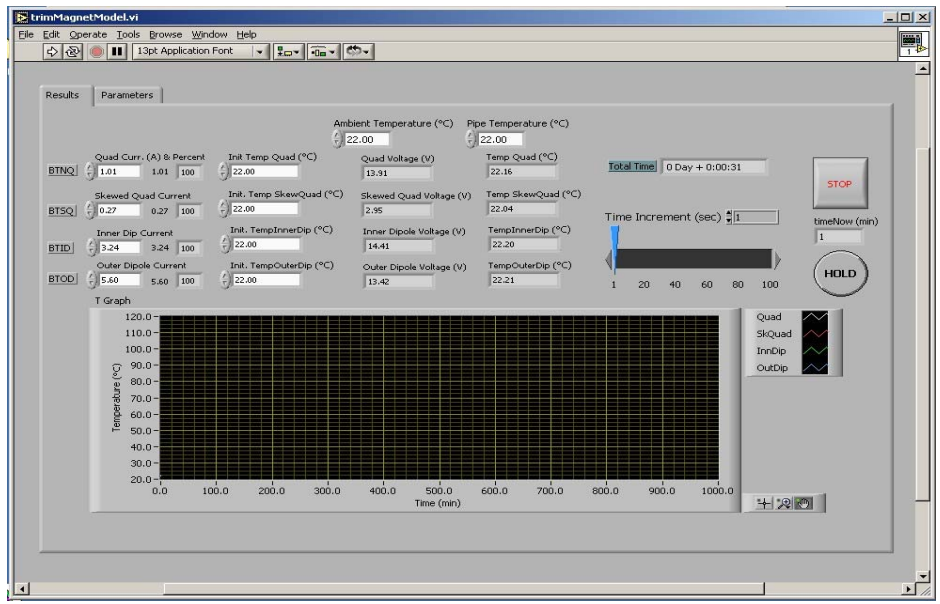
TC5 Inner Dipole @ 200%



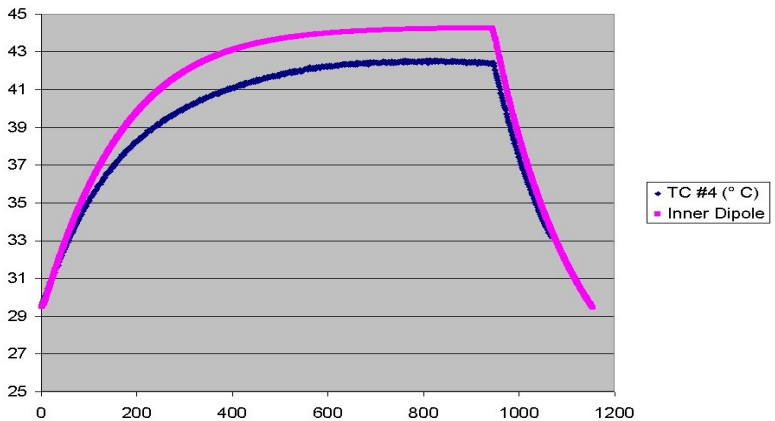
Model:



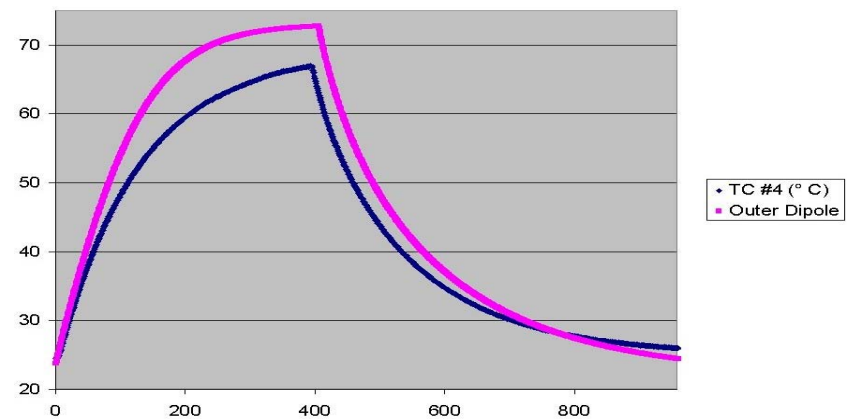
$$T_{n+1} = T_n + \frac{1}{C}\tau\left(P + \frac{(T_{in} - T_n)}{R_{in}} + \frac{(T_{out} - T_n)}{R_{out}}\right)$$



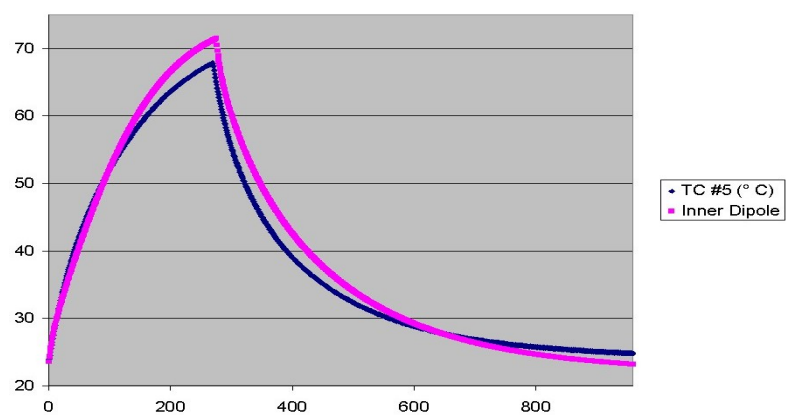
TC4 Outer Dipole @ 75%



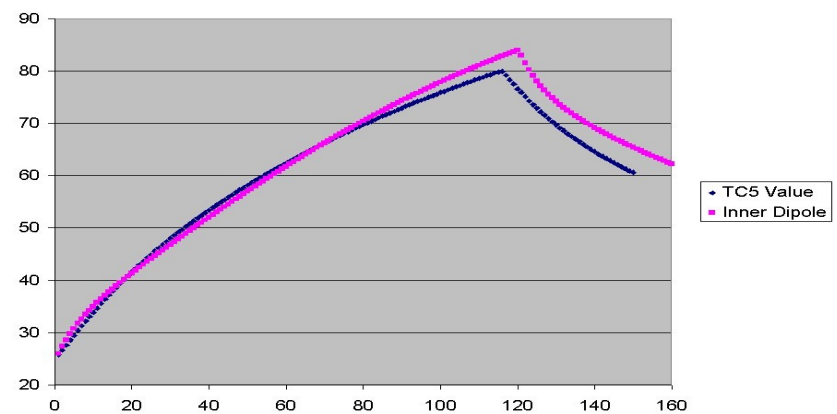
TC4 All Nominal



TC5 Inner Dipole @ 150%



TC5 Inner Dipole @ 200%



What is useful format for users?

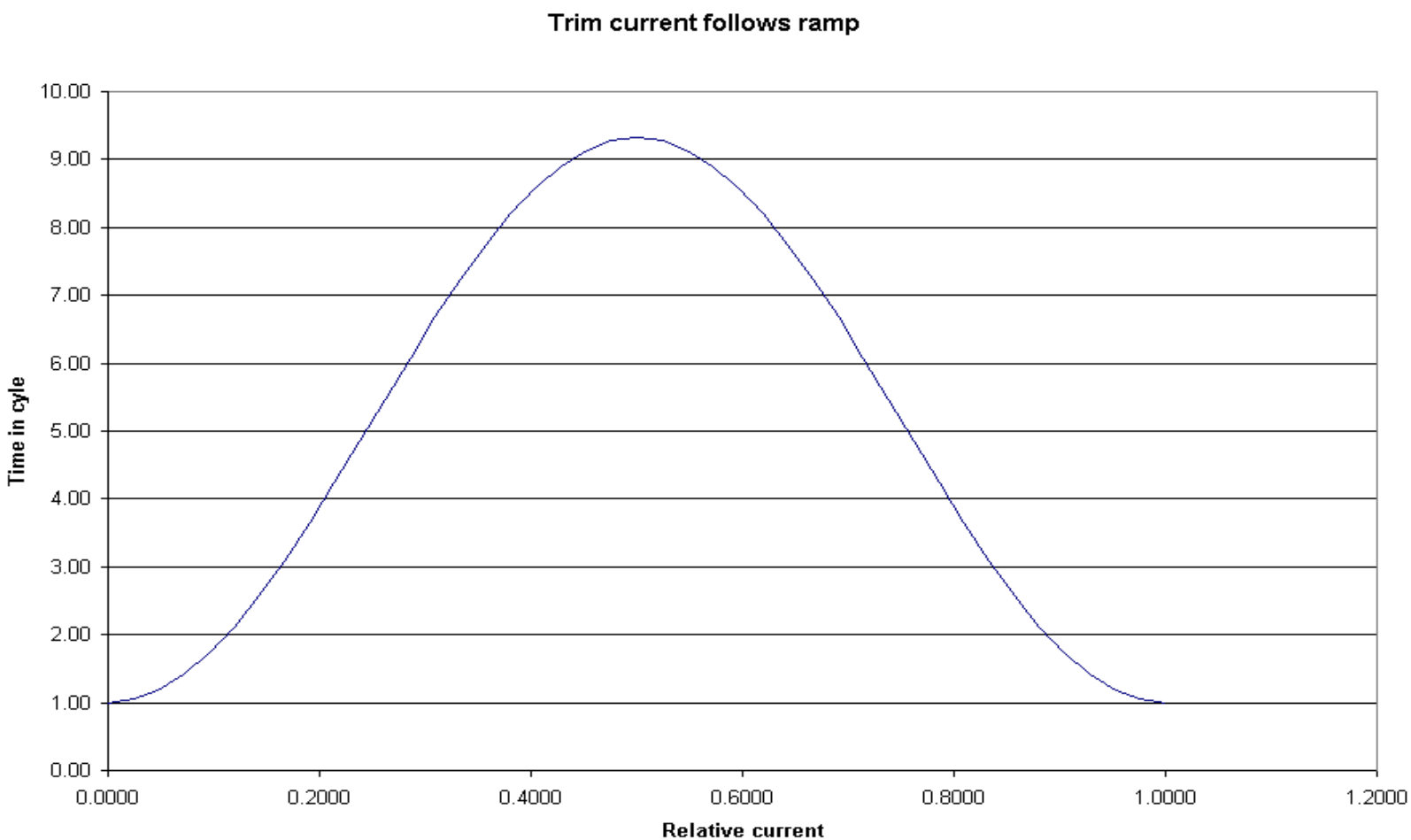
(studiers and tuners less expert than Ray)

- Four-dimensional space (four trim currents)
- Endless tables?
- Good 4-D graphics?
- Fix two, show contours of allowed rep rate?

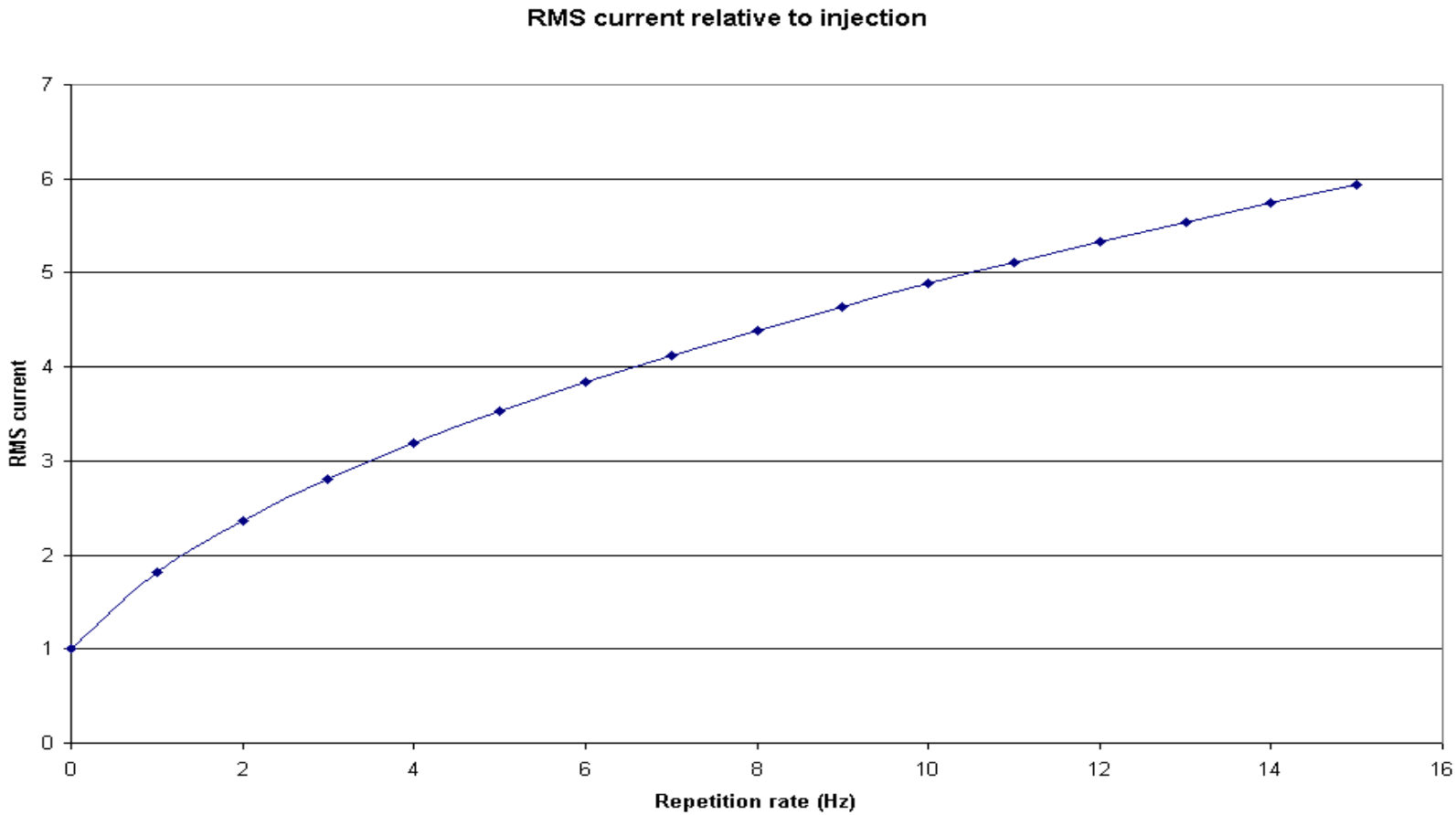
Assumptions?

- Ramped trims track main bus?
  - RMS current = 5.94 x injection current
- Only ramp when beam?
  - Not exactly linear in rep rate
- Studies vs. tuning for operation?
  - Time to heat coils

Ramp – rms = 5.94 x inj



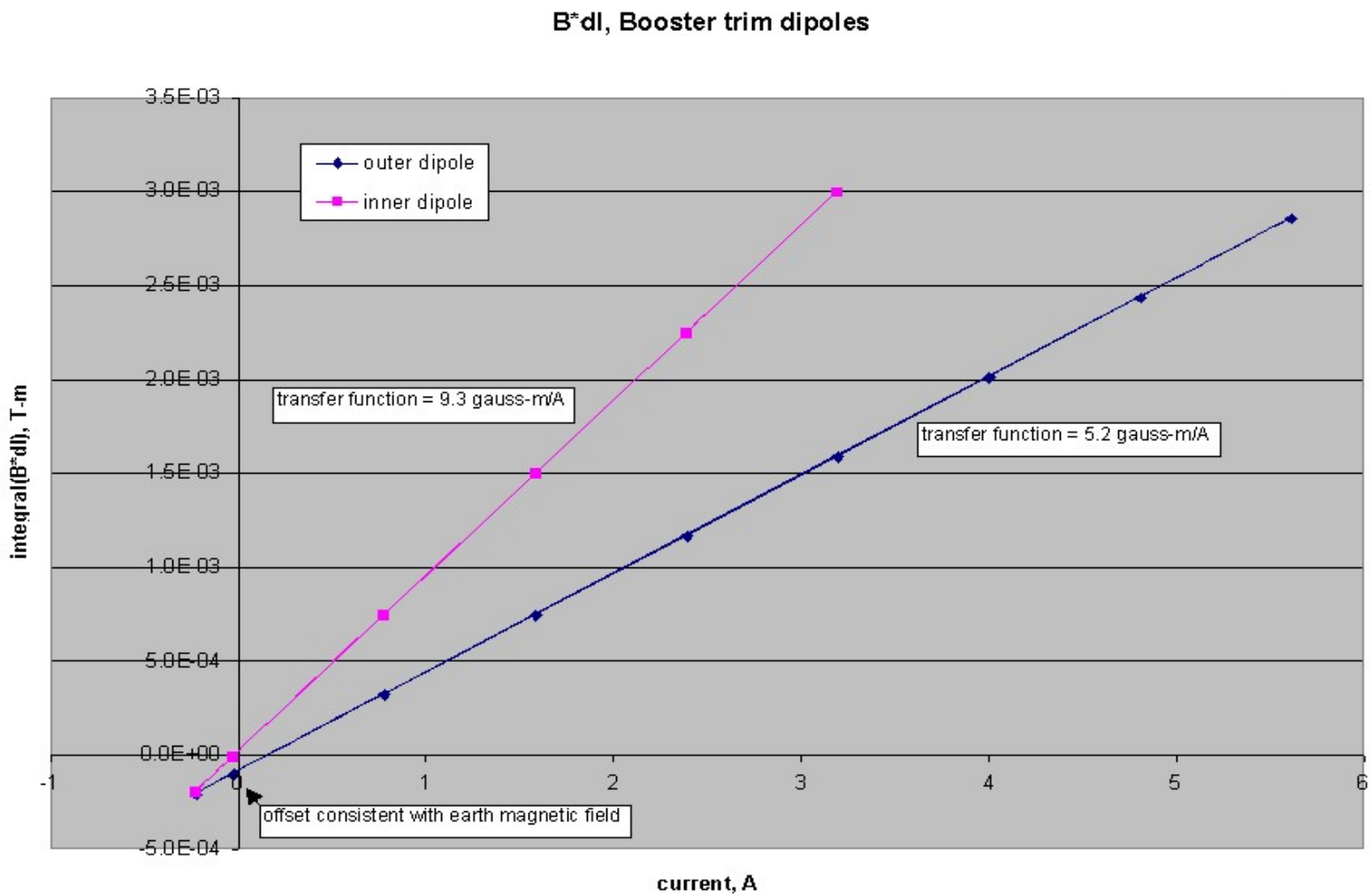
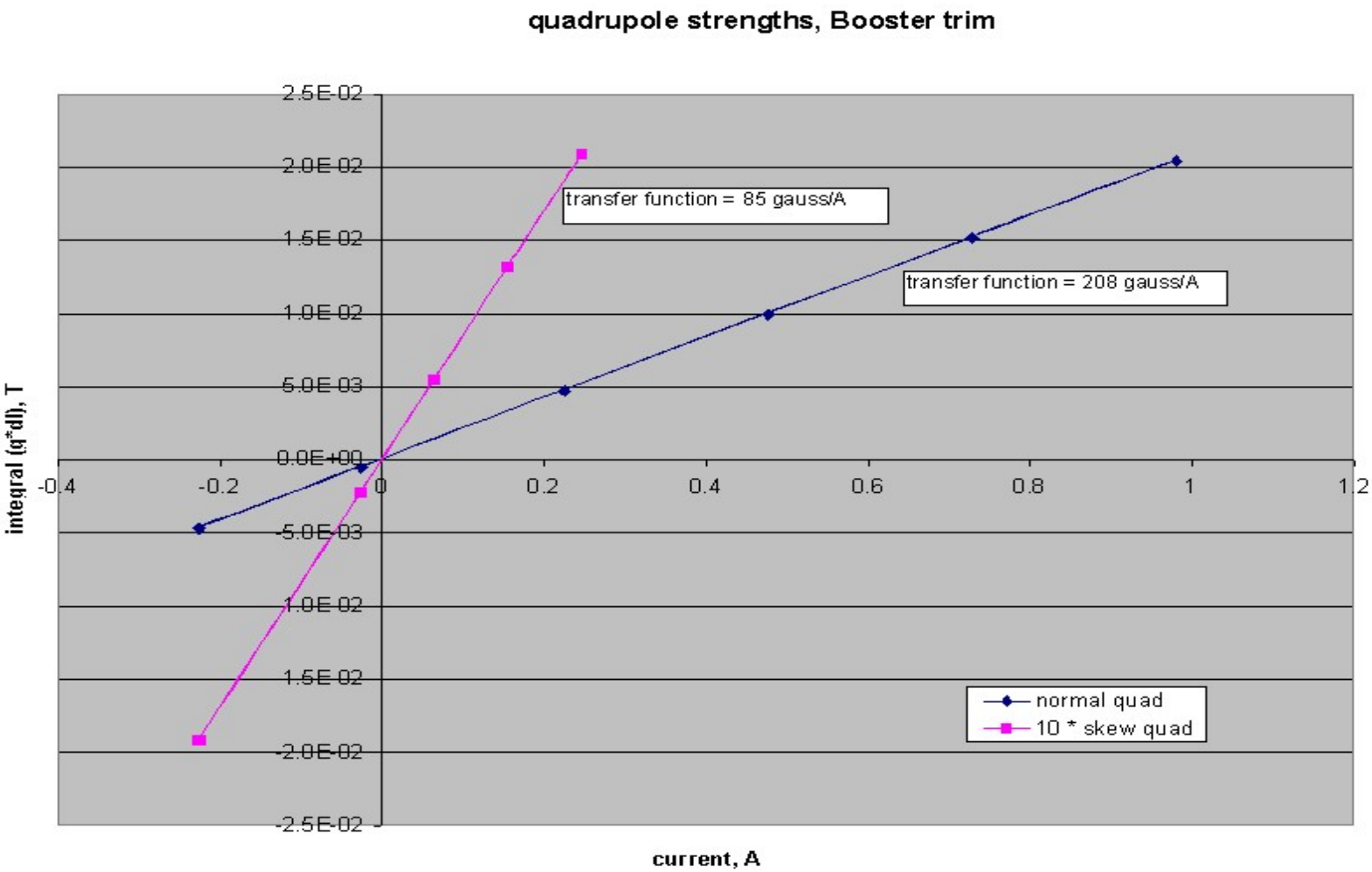
Duty cycle
rms current vs. rep rate



What next?

- Agree on useful data presentation format
- Decide if current trim package meets needs
- Design and test enhancements to package

Dipole Strength:



Quadrupole Strength: