



From: Jnet%KERBYOCERNVM "jim" 28-JAN-1991 02:13:30.51
To: jim <jbs@fnal.c>
CC:
Subj: Collar deflections under preload (2nd time)

Jim,

Bon Jour, and all that. Hope things have settled down to dull roar back at FNAL. So far so good on this side of the Atlantic...the first LHC model magnet was delivered two weeks ago or so, but it has many things different from the final 2 in 1 design, so I think it's more of a showpiece than a actual test magnet. They won't complain if it works, I suspect. Congrats on the short magnet test!...

Let's see, just before I left I gave a relatively bad talk on some finishing up stuff I tried to get in before jetting over here (yeah, you could probably drop the 'relatively'). Just goes to show you really do have to think a bit when using computers all the time...well, it took a little while to figure out how to spend your money from over here, but I finally did...so I re-ran the model using midplane pressure loads rather than displacement loads (we decided last time the results didn't add up because as one coil was loaded more heavily the other one would unload, so I needed to double check the compressive coil loads to see what was actually applied OR re-run the model using coil preloads...which I did (the second one, that is..). So, here are the results I get (Pressures in psi, deflections in mils)

Table with 4 columns: Inner, Outer, Vert, Horiz. Rows show pressure and deflection values for various cases.

Adding the two 13000psi cases (#3 and 5) and subtracting #1 from this, I get a vertical deflection of 4.5382, or 1.5% difference from case #7 (better than last time..) The horizontal deflections give a flavor for how much the rotation of the collar has to do with the deflection, the more negative the #, the larger the rotation effect... The sum above also suggests the numbers are OK in the tenths column, but not in the 100th's (accuracy of +- 0.05 or so...)

Anyway, hope this helps...I think the #'s check out this time. At present, I don't have access to a graphics terminal, so replying to requests may be a bit more slow than usual, as I need to do some more mental gymnastics than usual...I didn't include the midplane deflections in the above table because (a) I'm not sure it means anything in these cases (have to ponder that) and (b) I would have to take an average one, since when pressure loads are applied the coil motion varies from inner to outer edge...

Hope Tricia made out OK w/ spot weld model....Have fun, haven't broken or bruised anything badly while learning how to ski (yet). Lay low, too....