

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia


October 18, 1989

MEMORANDUM:

TO: D. Emerson
P. Jewell
J. Lamb

FROM: J. Payne

SUBJECT: 230 GHz Insert



Here is a plot of the recent results with the 230 GHz insert in the square, 4 K, closed-cycle dewar. At 230 GHz the noise temperature is around 135 K DSB, and it tunes up quite easily. As you can see, there is a nasty slope in the performance that we don't understand. Tony has designed a new mixer that he hopes will not have this problem, but the completion and test of this is several months away.

I have tried this insert in the big (8 insert dewar), and it works okay. The big dewar really is big and cumbersome, and although it is needed for a full blown, 70-230 GHz receiver, it is not necessary for a quick 230 GHz dual-polarization receiver. We need to make the decision soon regarding which dewar we are going to use. The remaining design jobs that need to be done to the cryogenics/optics package are:

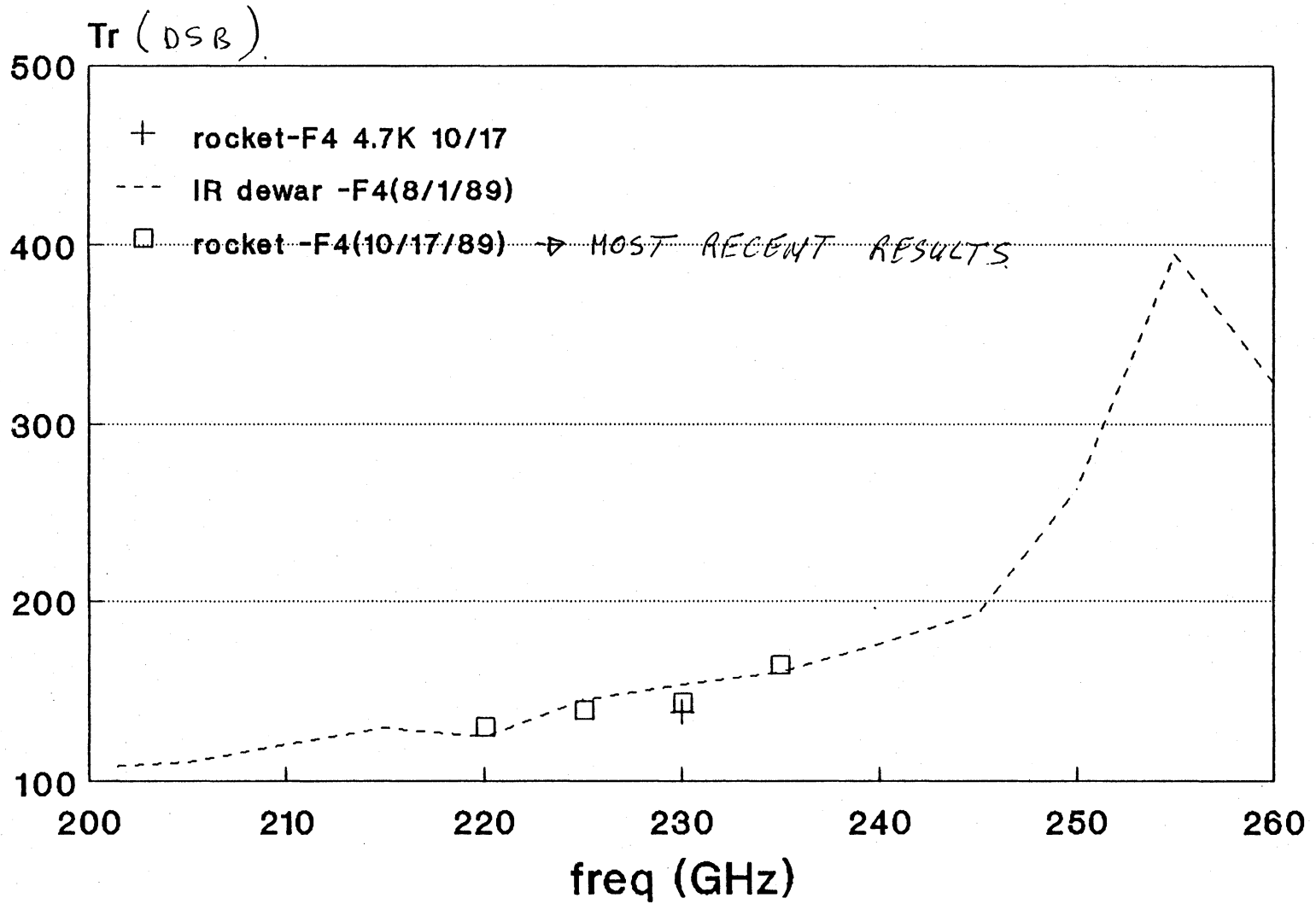
- 1) A simple polarization diplexer
- 2) Backshort drive servos

The first job depends on the choice of dewar; the second doesn't. I had hoped to do both these jobs but am having difficulties because of commitments to the GBT at the moment. It would take me one week to design both these items, and I would be happy to squeeze this in if James and Antonio are bogged down with telescope support.

We now have working designs for 70-90 GHz, 90-115 GHz, and 200-240 GHz inserts, and Nancyjane and Dan will produce tested inserts for all these frequency ranges in the next few months.

Attachment

comparing 230 dewars



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