of measured I-V curves is given in Figure 6. The laser power incident outside the dewar window was measured with a large area power meter. In the recording of Figure 6, the power absorbed by the device was 2 mW while the power measured in front of the offset paraboloid mirror was 20 mW. We can thus estimate a total optical coupling loss of 10 dB, which includes small losses in the window and the black polyethylene sheet. Similar measurements for device A gave 20 dB total optical loss. These values agree quite well with theoretical predictions. The coupling loss may be improved slightly with the range of resistance values that are possible with films of thicknesses up to 70 Å. However, a more substantial improvement can be obtained by using the matching techniques described in Section III. From Figure 4 we can predict coupling loss of 4 to 5 dB by using the PPQ layer, and better than 1 dB with the backshort technique. We are in the process of preparing for such experiments.

With the present optical coupling loss of 10 dB, it should possible to measure the receiver noise temperature. The first such measurements have resulted in extraneous signals in which a fraction of the laser power is diverted toward the chopper and gives rise to a modulation of the power at the detector, which in turn changes its impedance and sends a chopped signal through the IF amplifier. Further

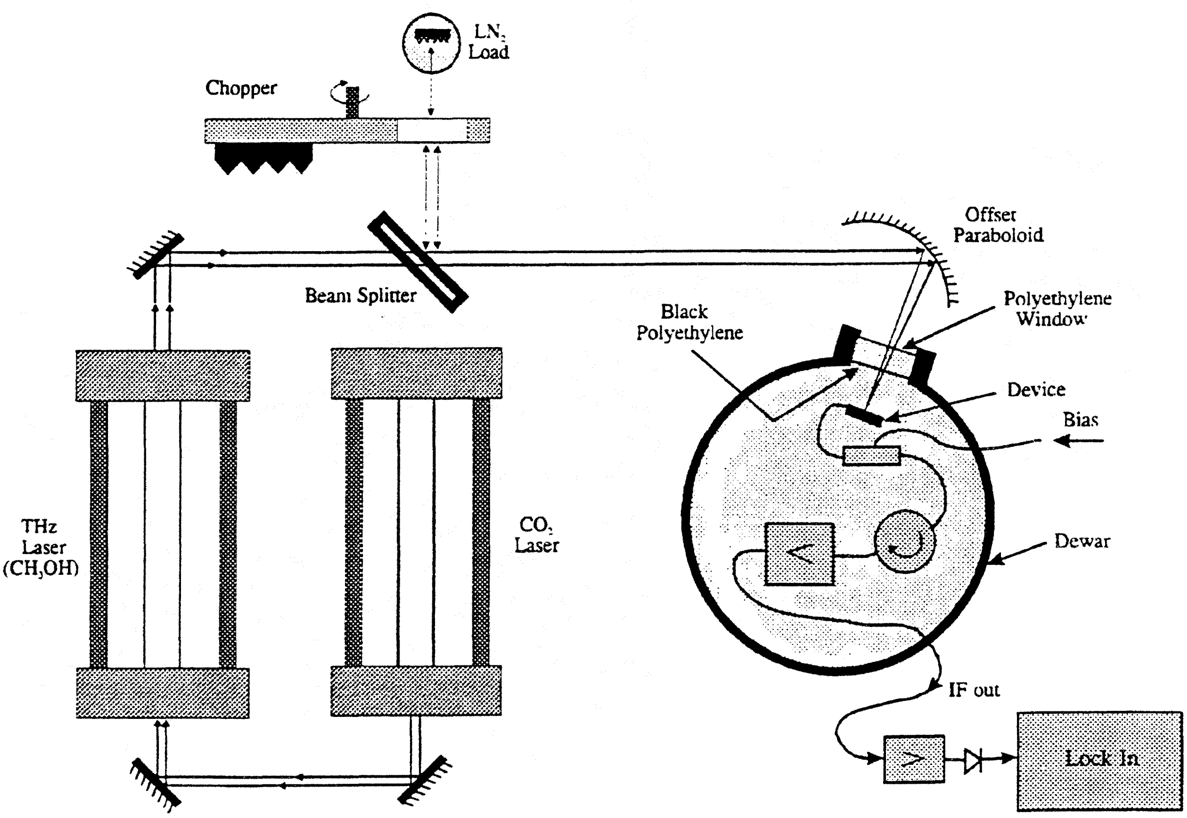

Figure 5: Optical layout of the noise temperature measurements.