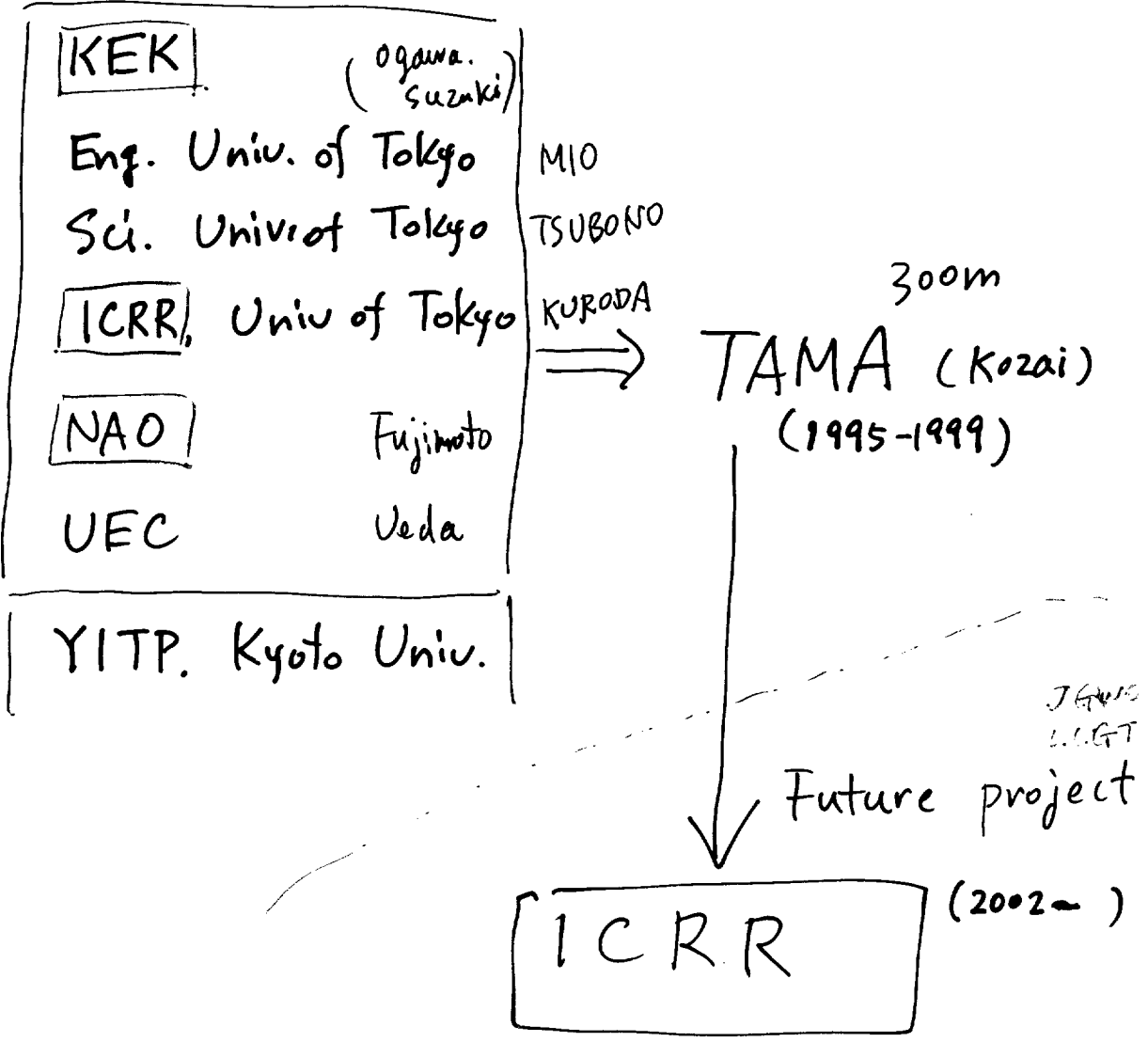
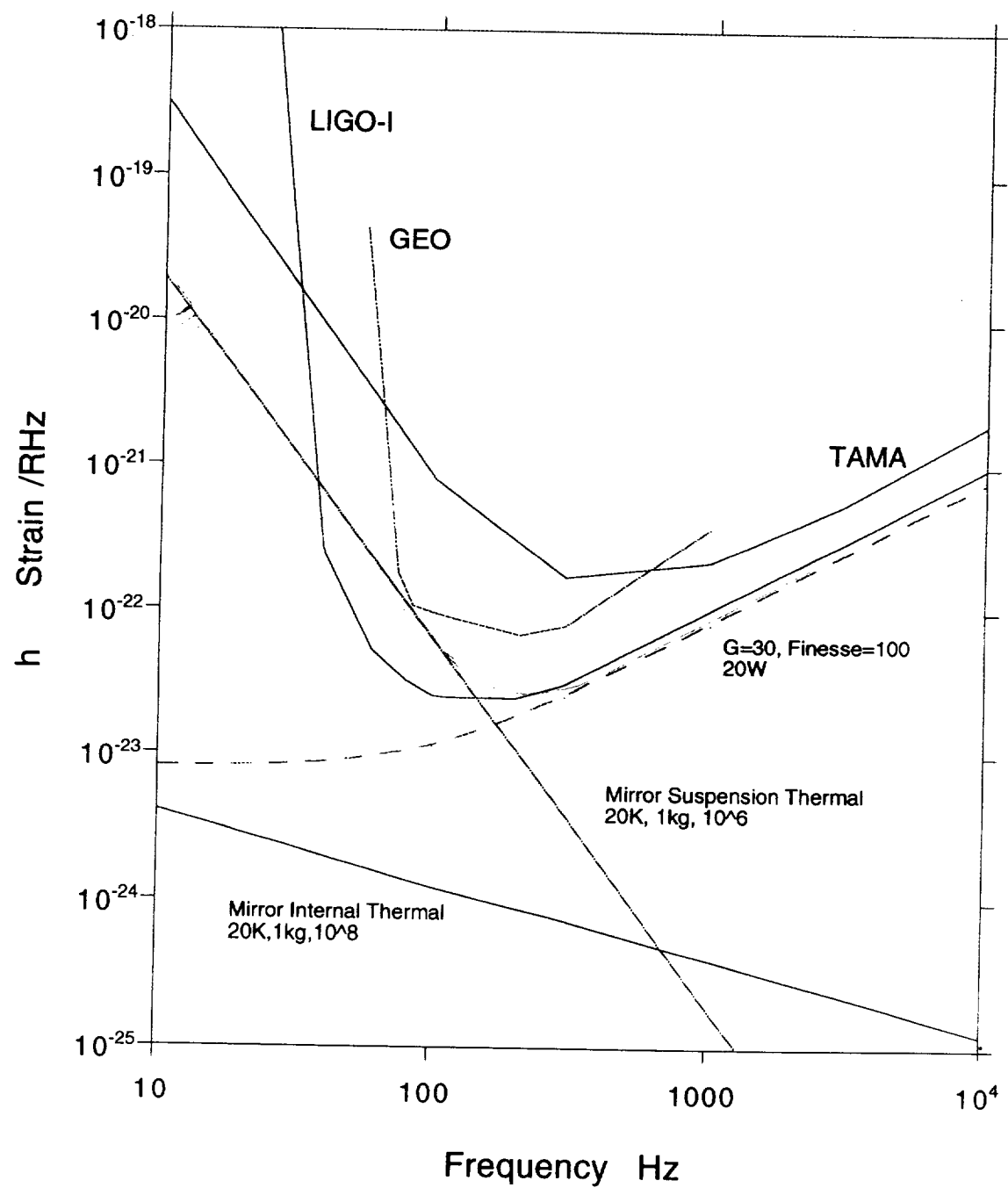


□ FUNDING ORGANIZATION



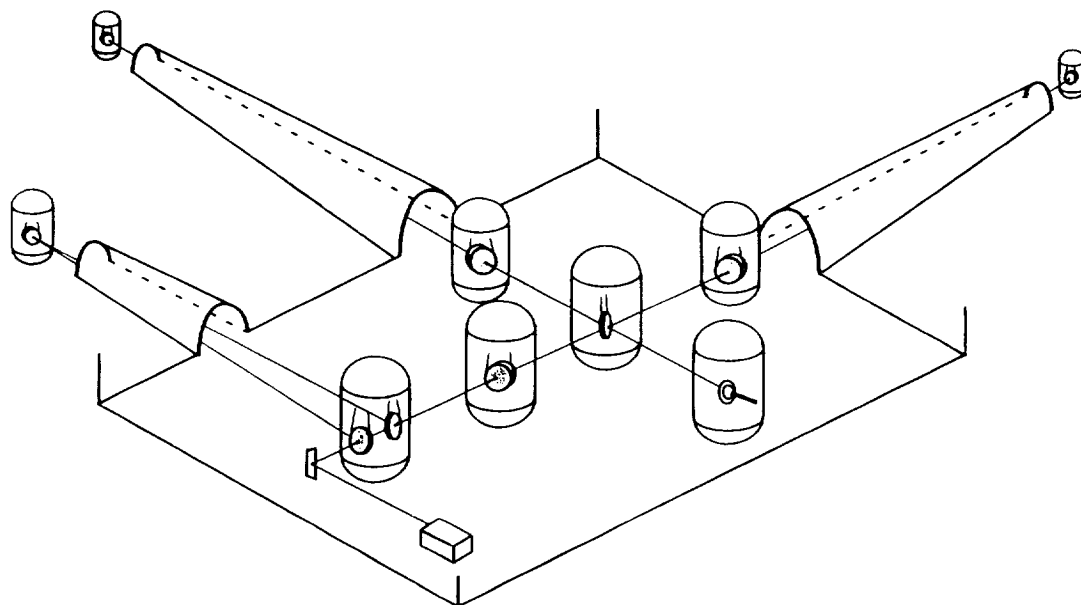
Not approved

### Cryogenic TAMA Sensitivity



k mスケールの低温重力波望遠鏡  
(LCGT計画)

Large Scale Cryogenic Gravitational Wave Telescope



# LCGT Sensitivity

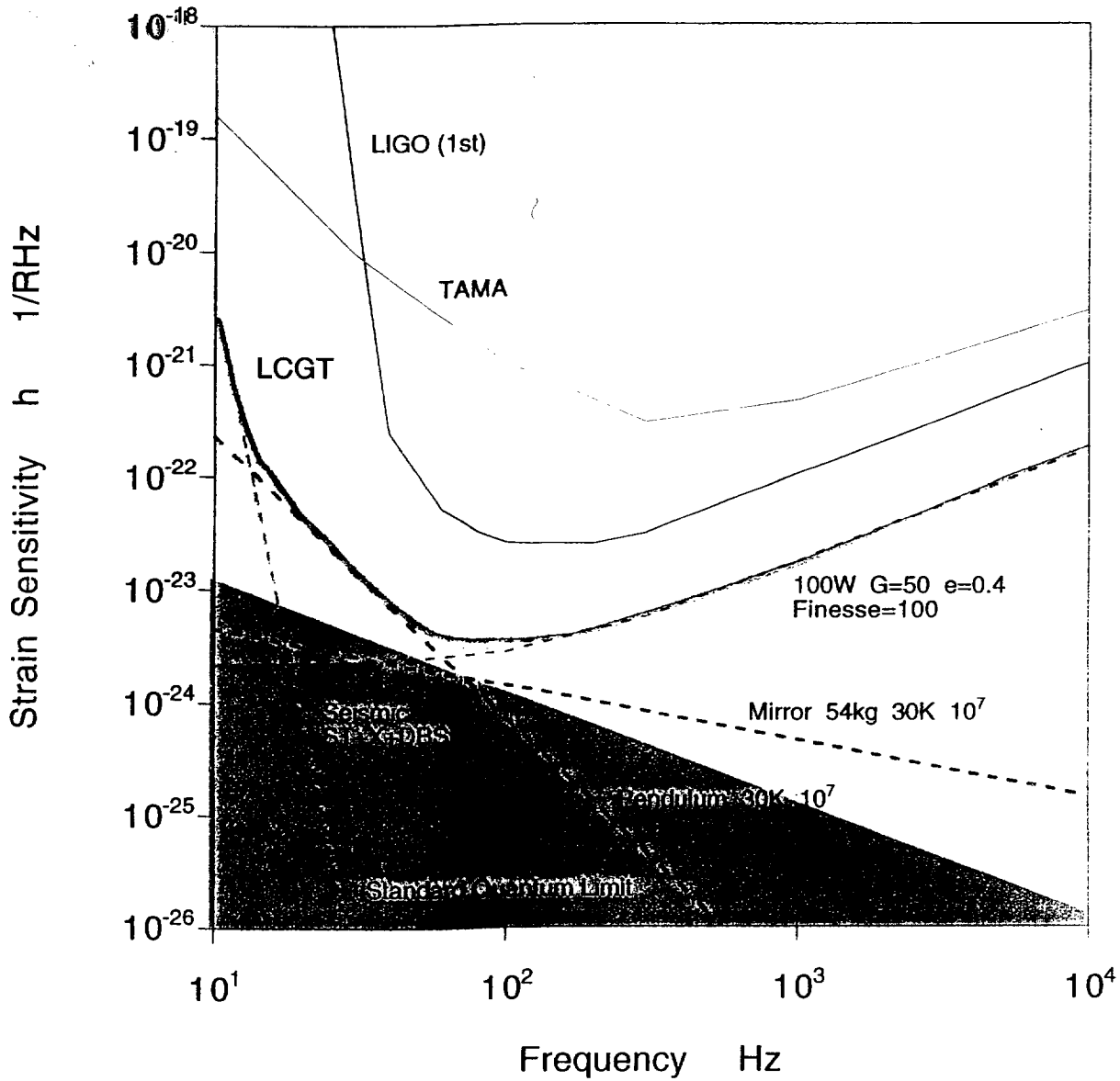


図1 LCGT計画の感度曲線

低温鏡の採用により、100Hz付近の感度が量子限界の感度に接近している。

TAMAより2桁、LIGO第1期より1桁近く感度が高い。100Hz以上の感度の改善は光のパワー増加とそれに見合う光学系が必要。

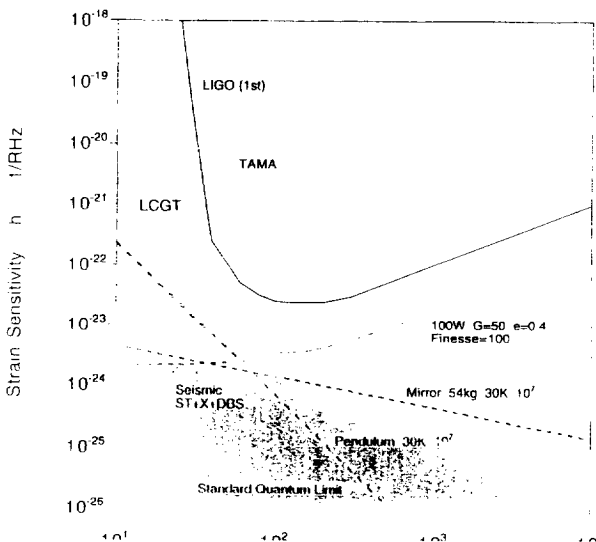
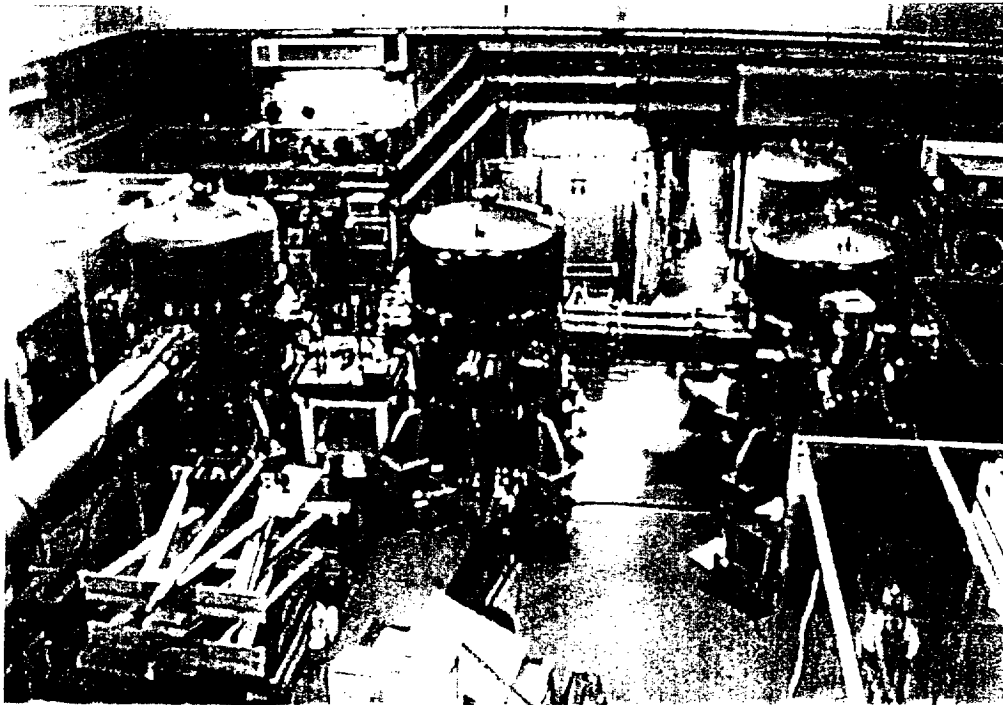
感度は、歪みのパワースペクトルで与えられ、鏡の変位に直すには基線長 (m) を乗じ、バースト波に対するS/N=1の感度は各点で周波数の平方根を乗ずる。

# Large scale Cryogenic Gravitational wave Telescope

Aiming to catch at least one NS-coalescence once a year occurring at the distance of 60 Mpc with S/N=10

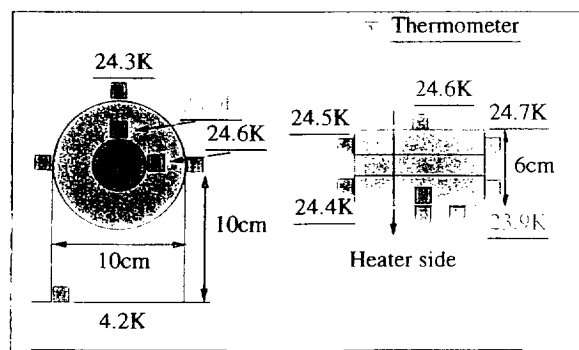
Compared with TAMA,  
 scaling up the baseline by 10 times  
 duct diameter by 3 times  
 laser power increased by 10 times  
 mirrors cooled down to 20 K

TAMA

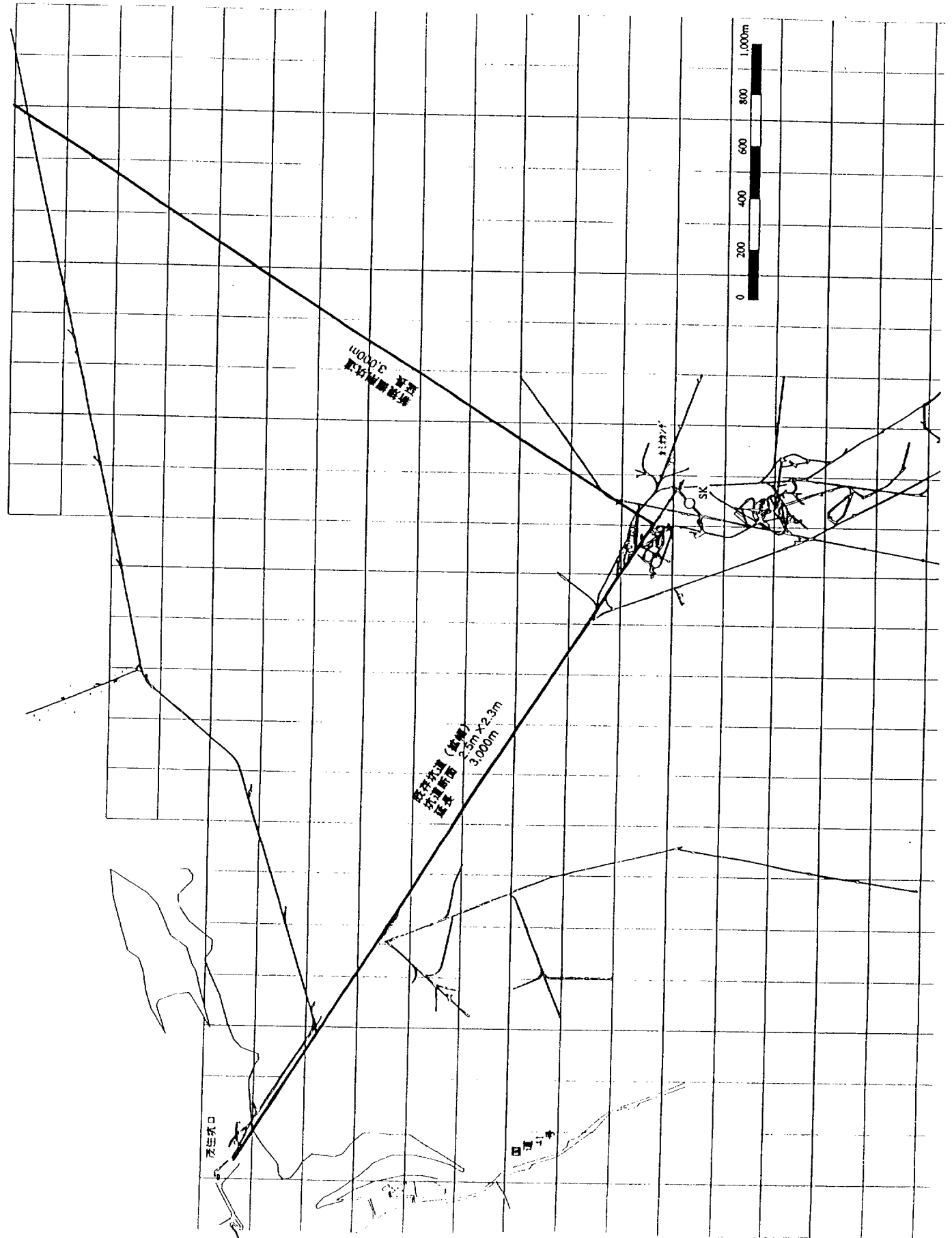


Sensitivity increased by two orders

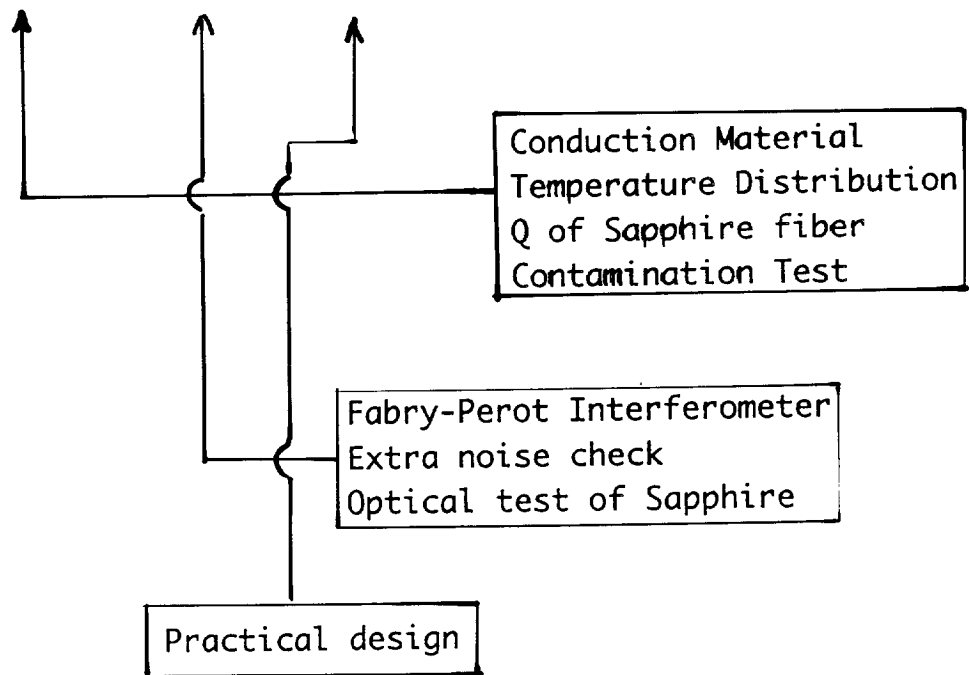
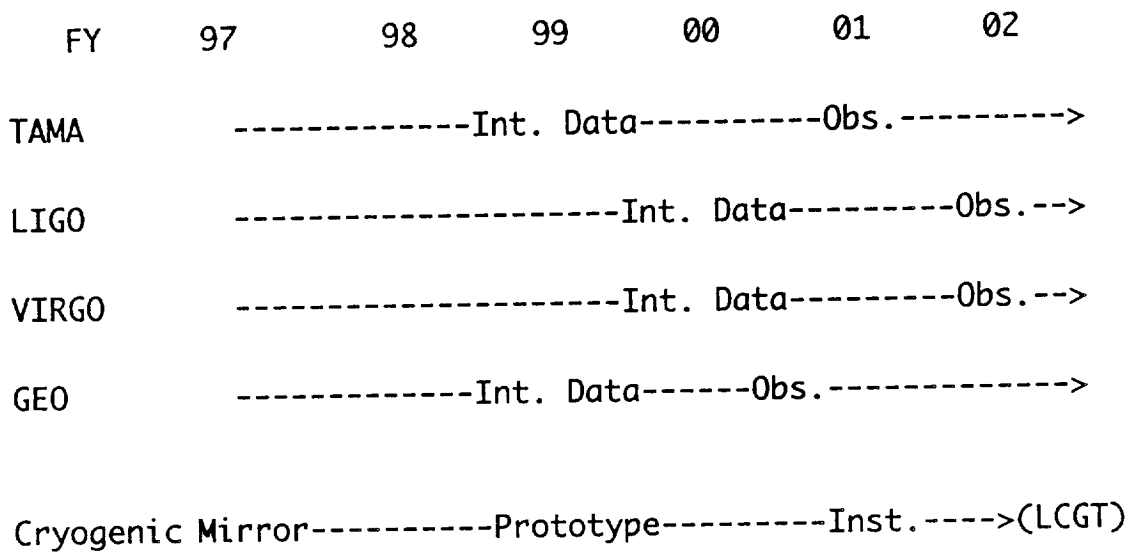
Sapphire fiber conducts heat



重力波アンテナ設置候補坑道  
茂住坑-500m準

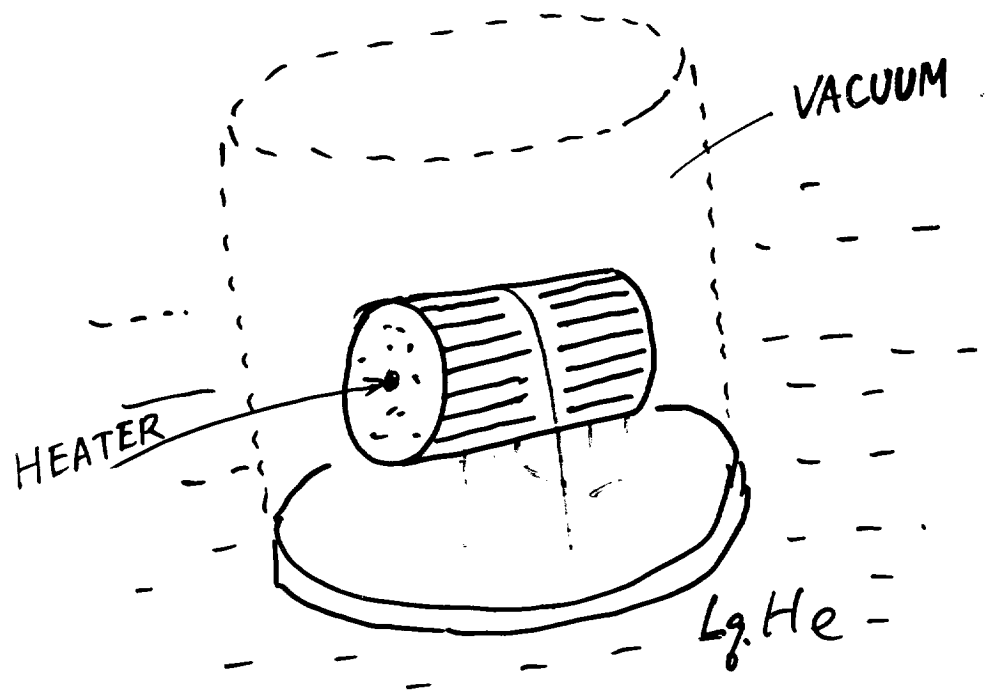


# Schedule of the development for the Cryogenic Mirror



# COOLING TEST

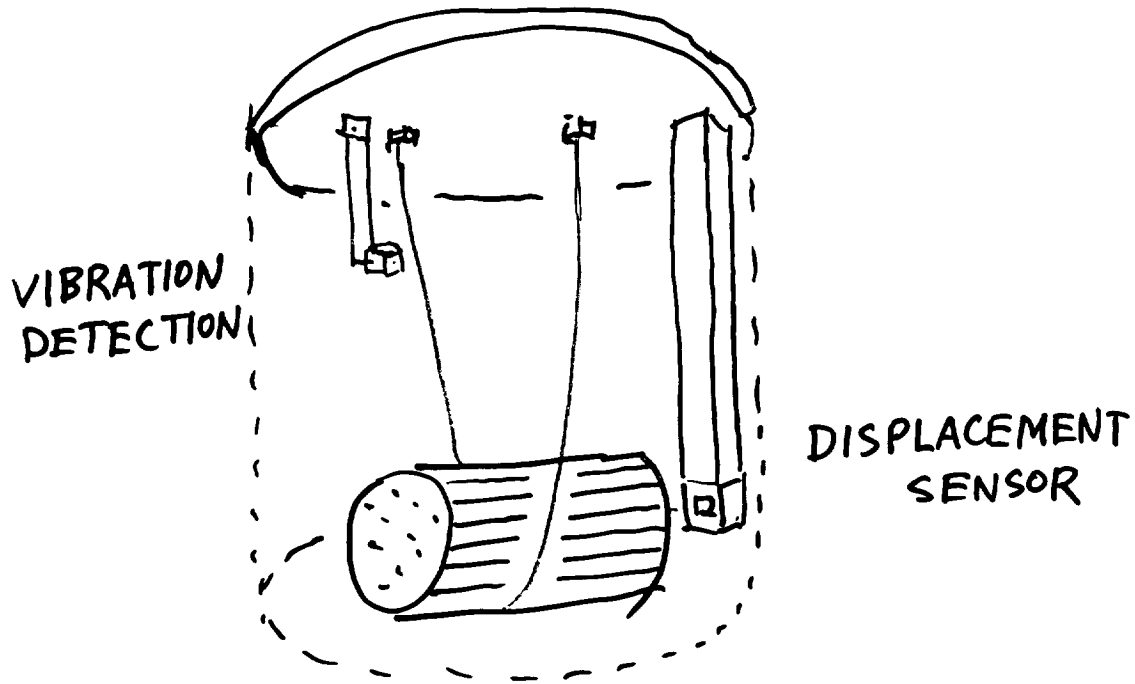
(FY 97)



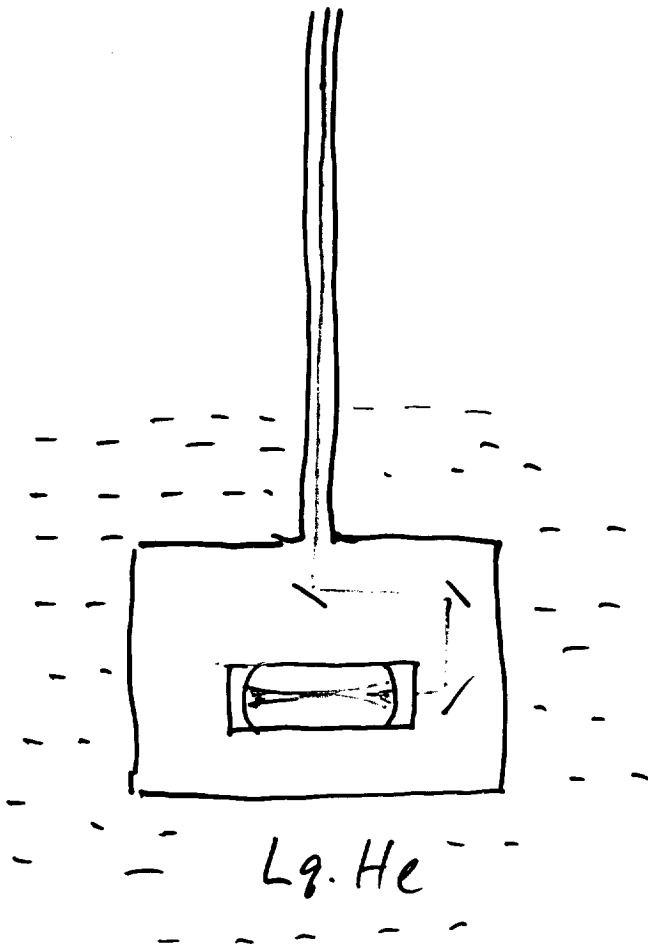


# MEASUREMENT OF Q

(FY 97-98)



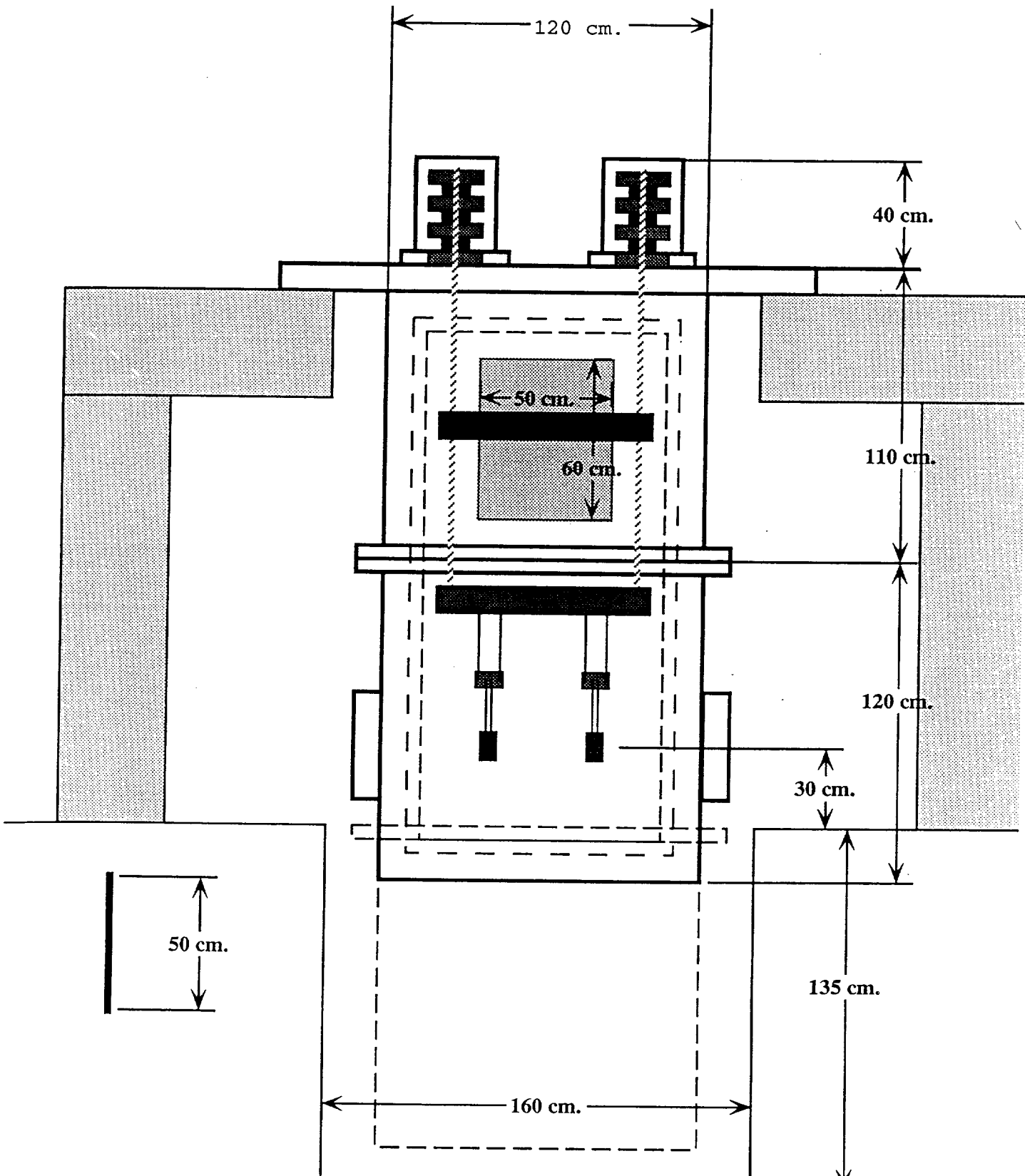
# MIRROR CONTAMINATION TEST (FY97-98)



MEASURE  
REDUCTION OF  
FINNENESE OF FABRY-  
PEROT CAVITY

# FIRST CRYOGENIC FP CAVITY (FY98)

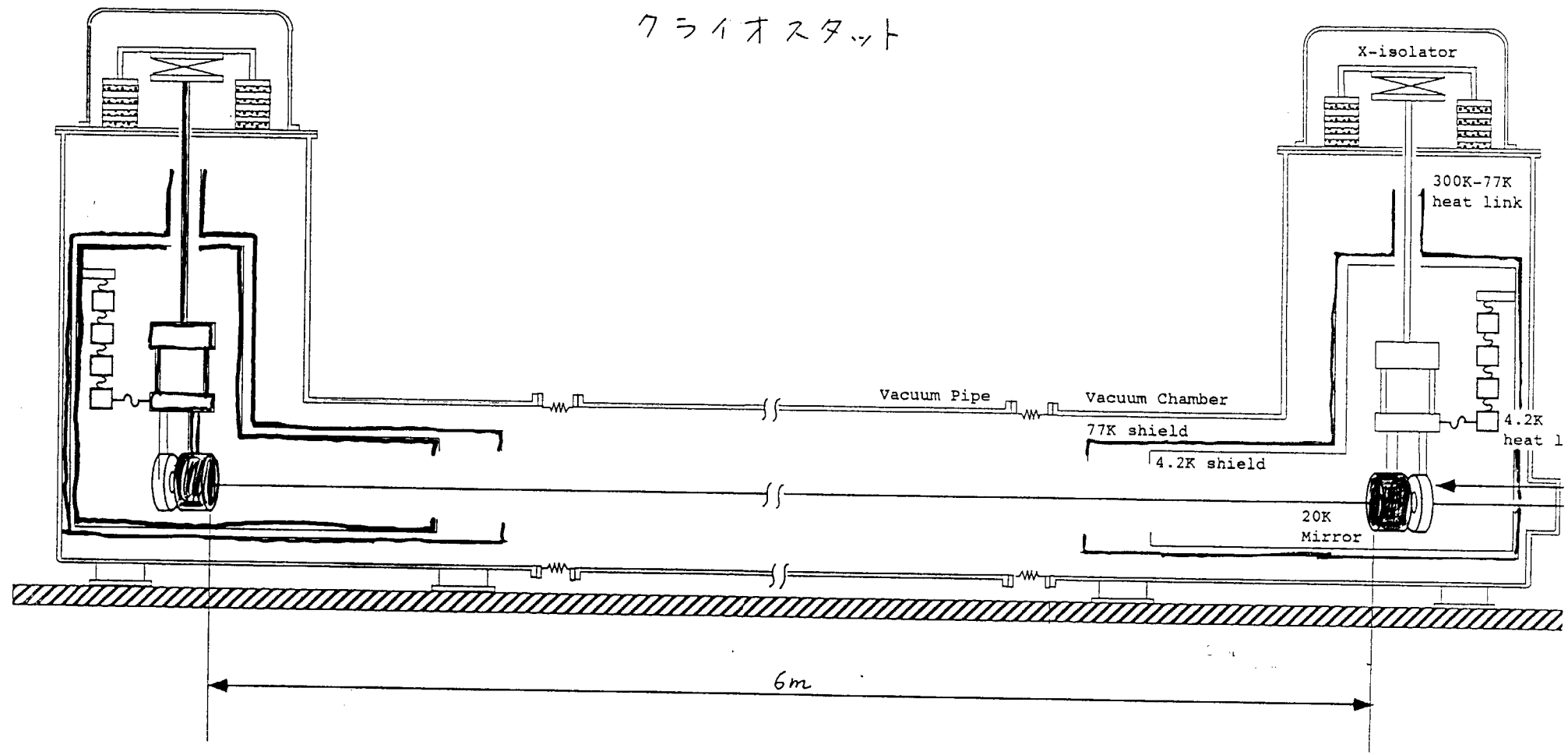
## Side view of next cryostat.

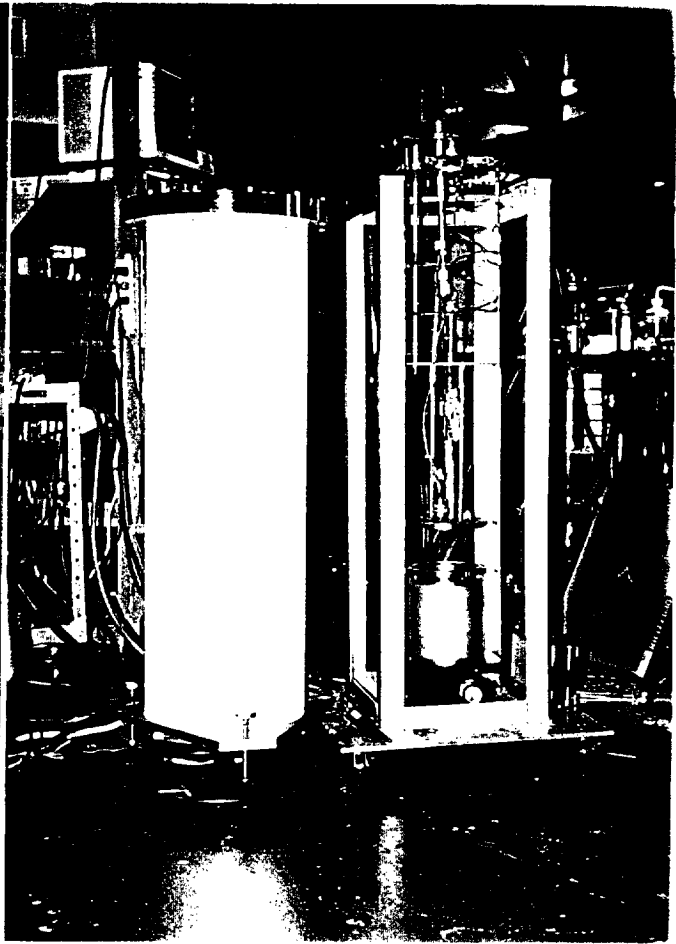
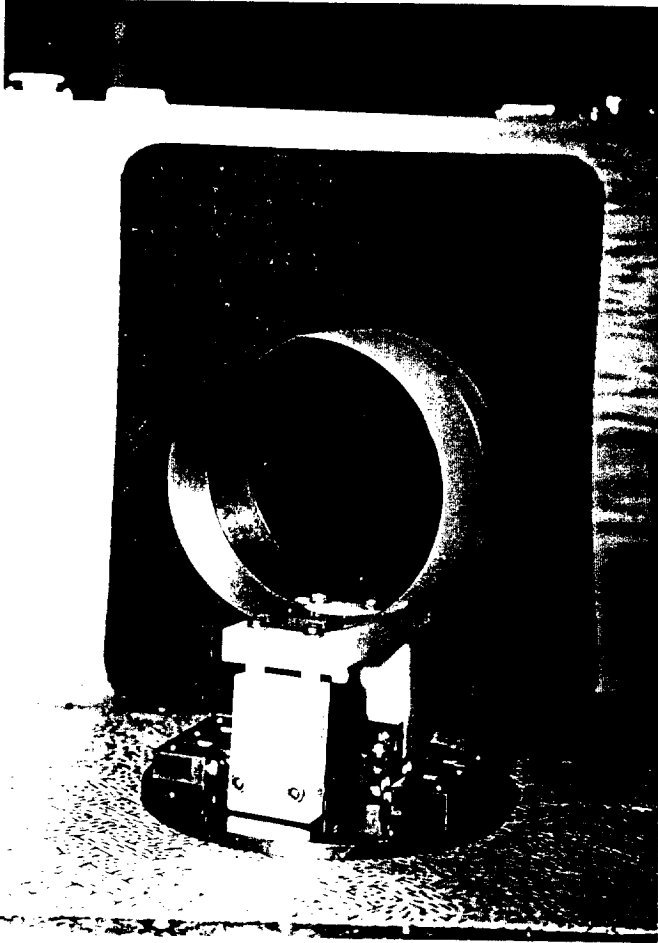


# CRYOGENIC FABRY-PEROT CAVITY

(FY99)

低温鏡開発用  
クライオスタット





*Note 1, Linda Turner, 04/30/98 10:45:34 AM*  
LIIGO-G980073-07-M