

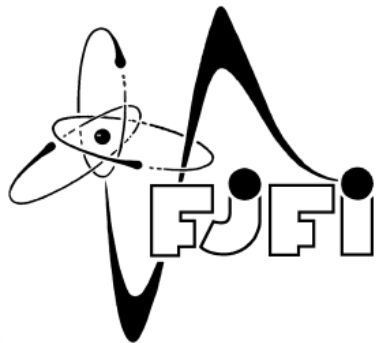
# Stručná historie tokamaků



Jan Mlynář

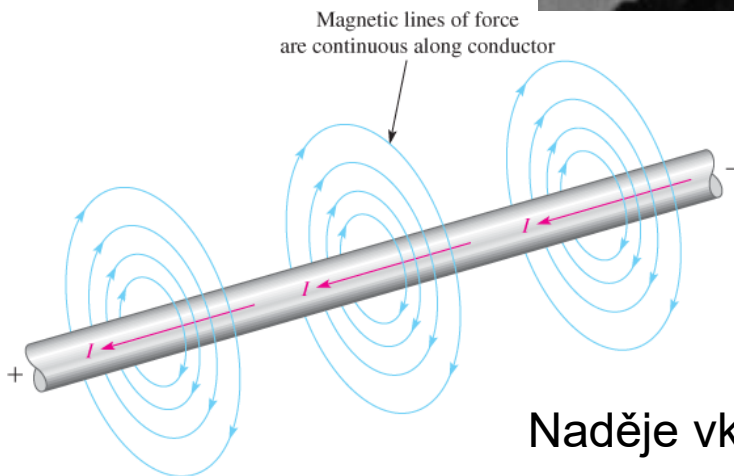
Pro studentský workshop FTTF, Mariánská, 10. – 14. ledna 2022



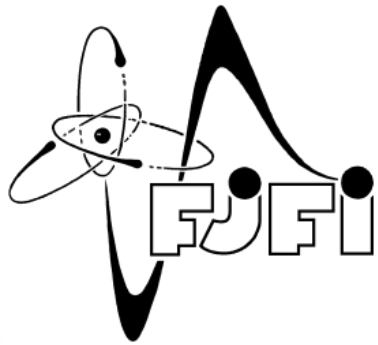


# Udržení plazmatu

$$\vec{F} = q\vec{v} \times \vec{B}$$

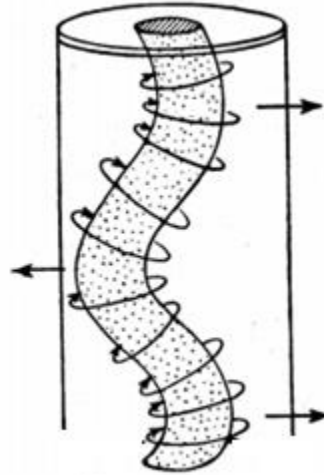


Naděje vkládané do pinče

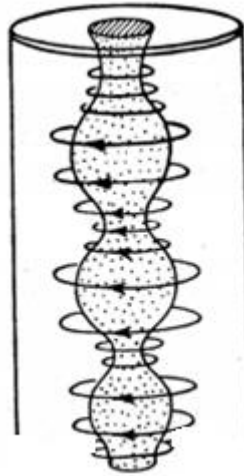


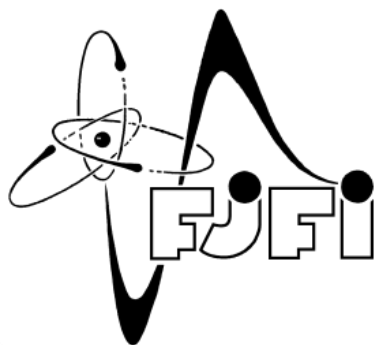
# Nestabilita plazmatu

**Smyčková  
nestabilita**

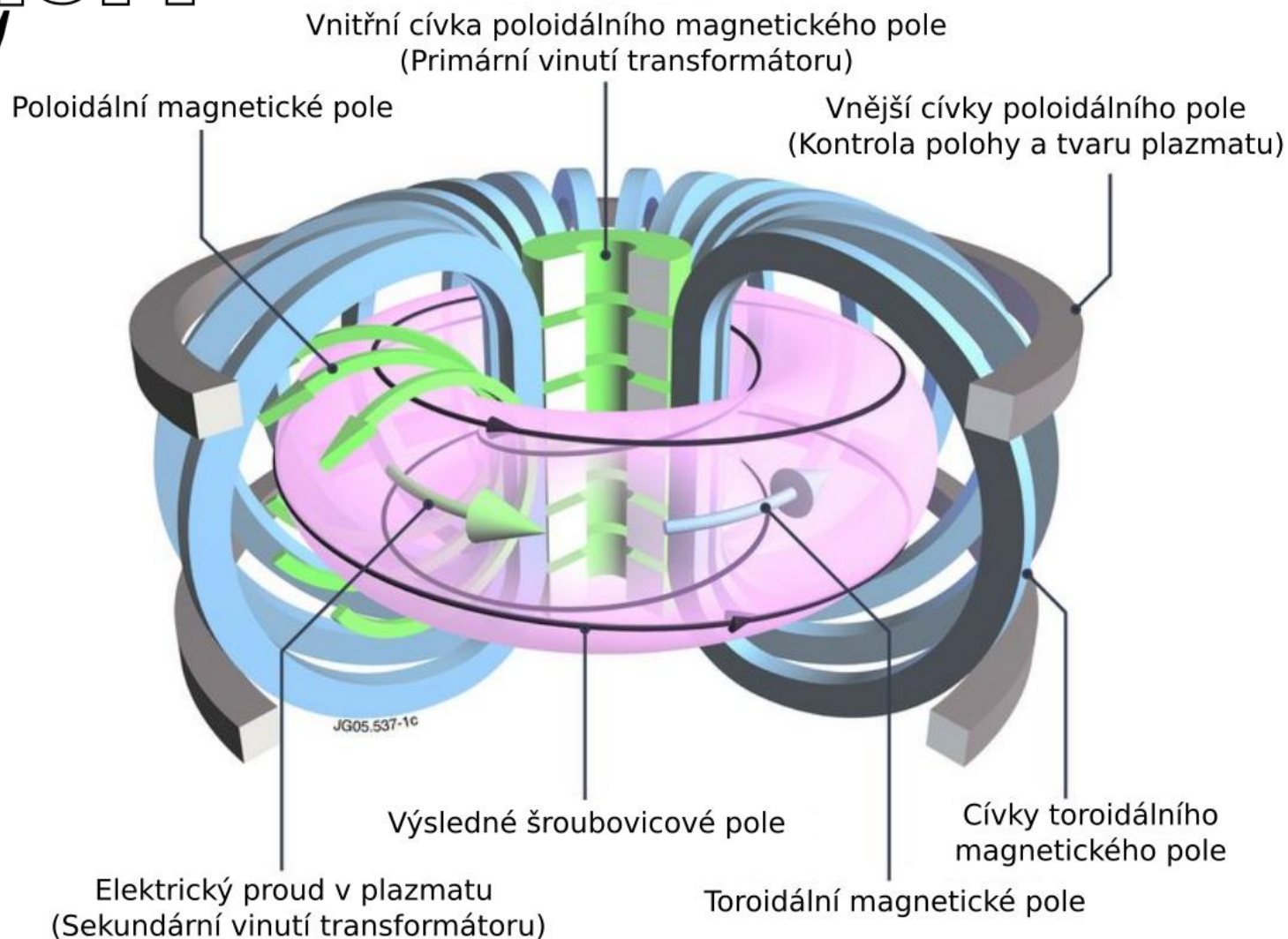


**Korálková  
nestabilita**

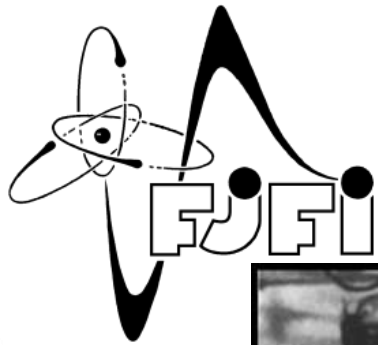




# Stabilní je tokamak

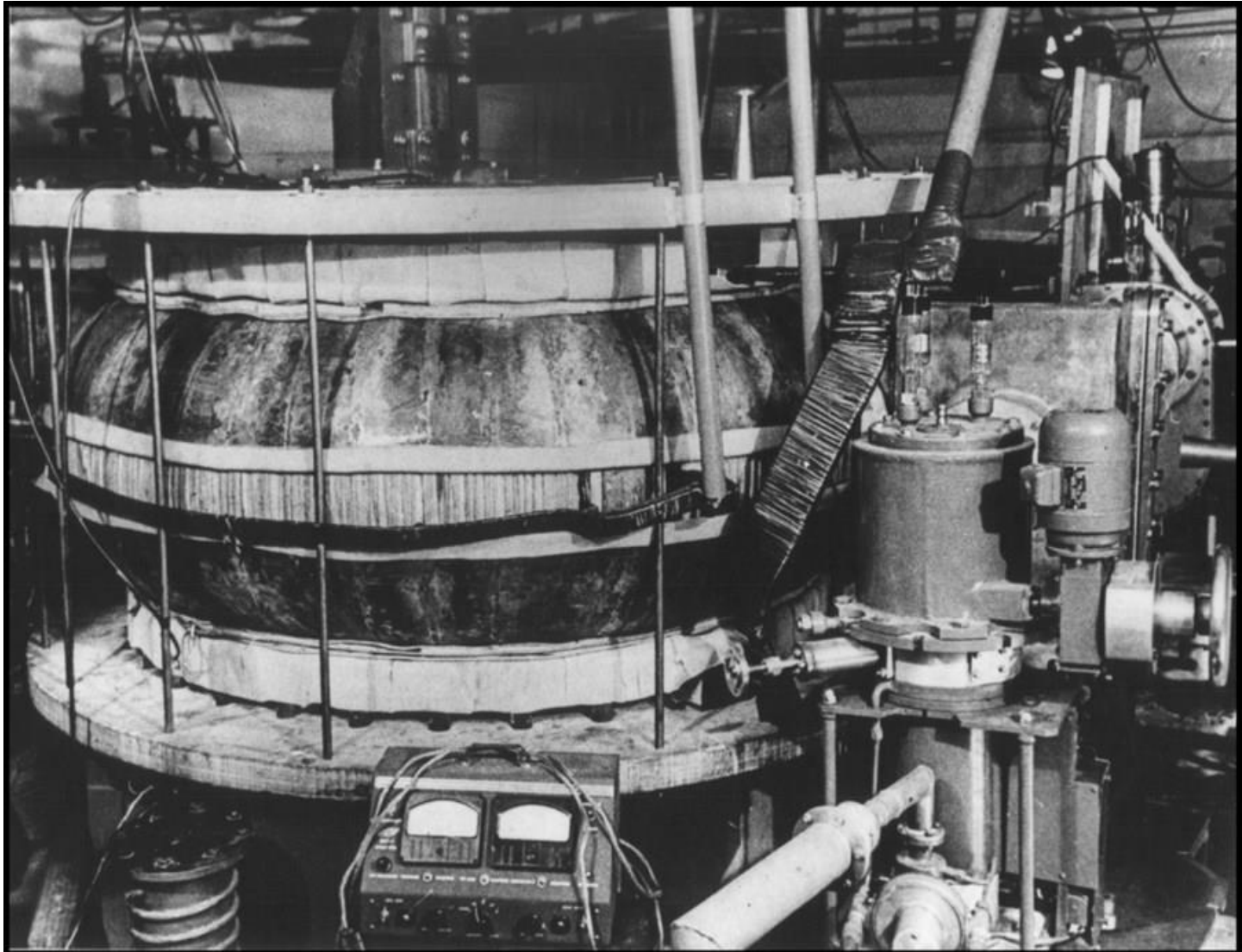


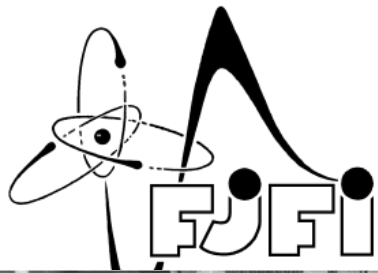




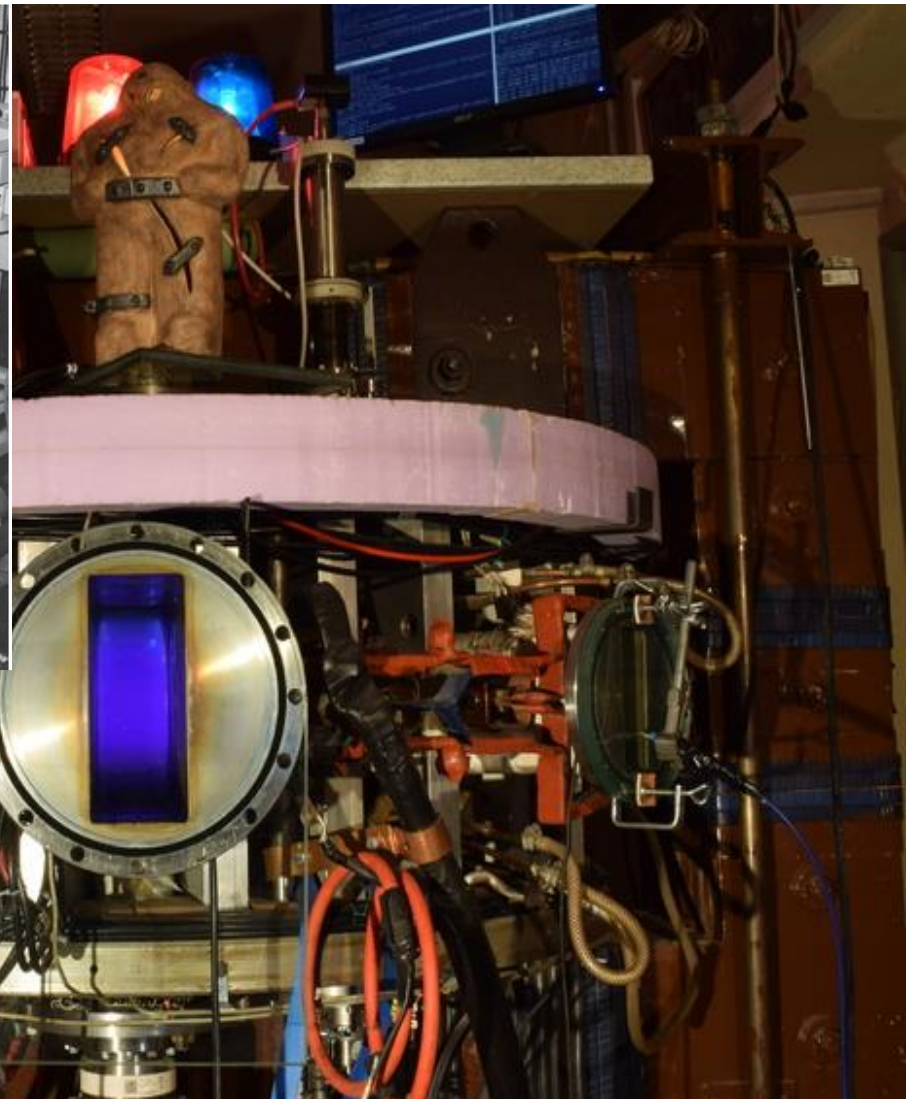
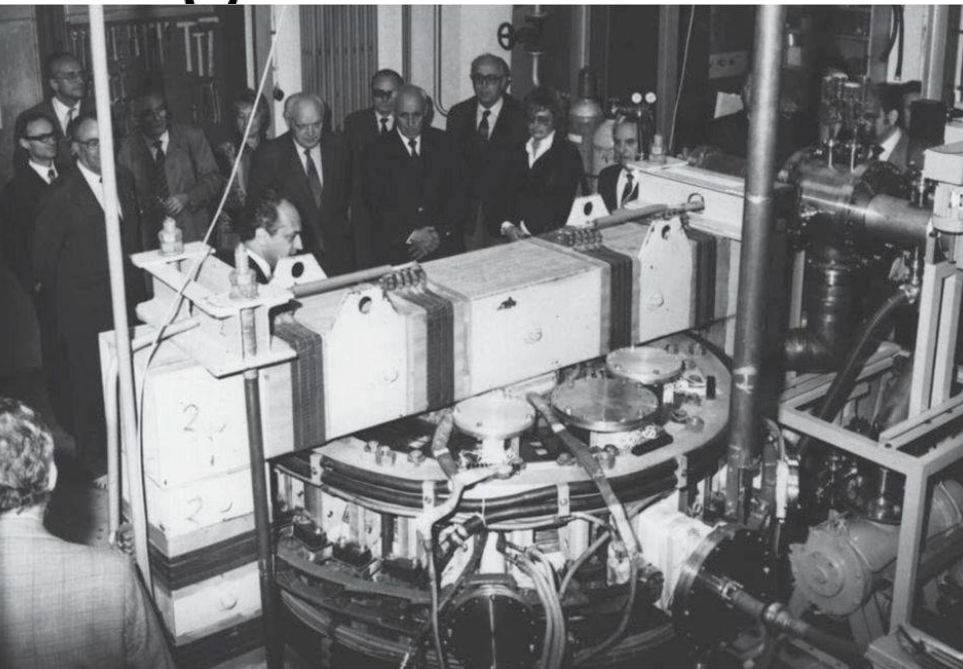
# Moskva, T-1

( $R=60$  cm,  
 $a=12$ cm)

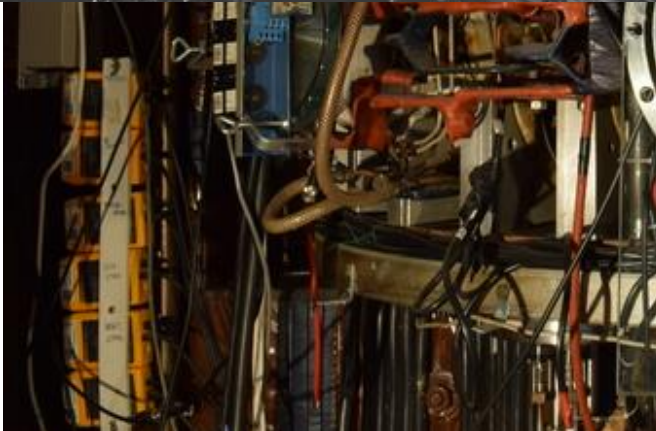




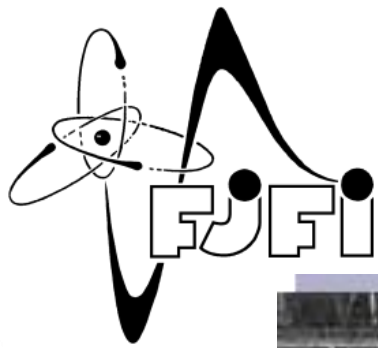
# Moskva, TM-1



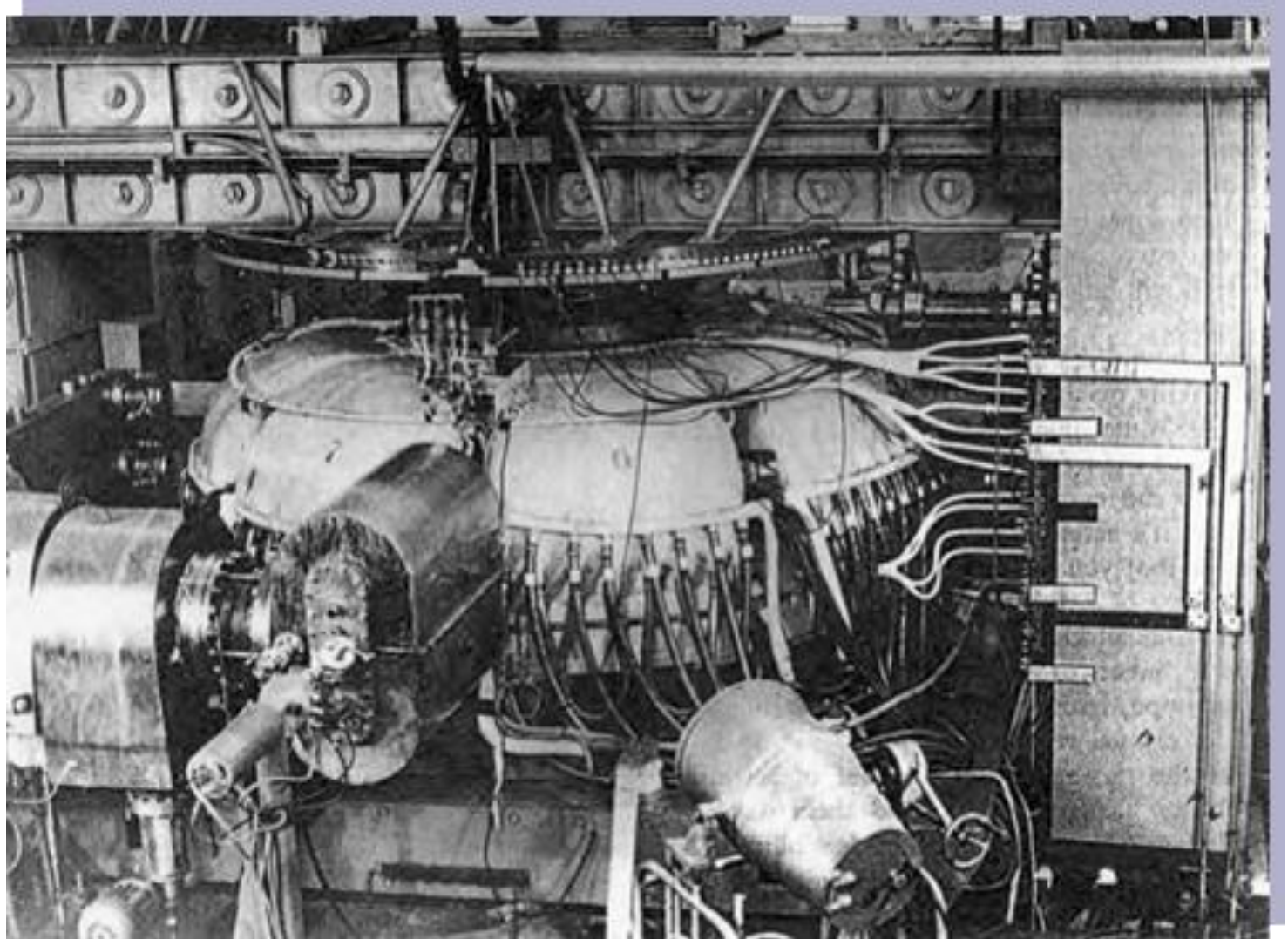
( $R=40$  cm,  
 $a=8$ cm)



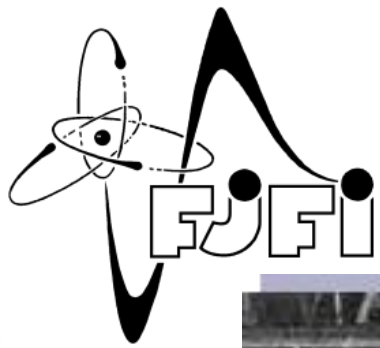




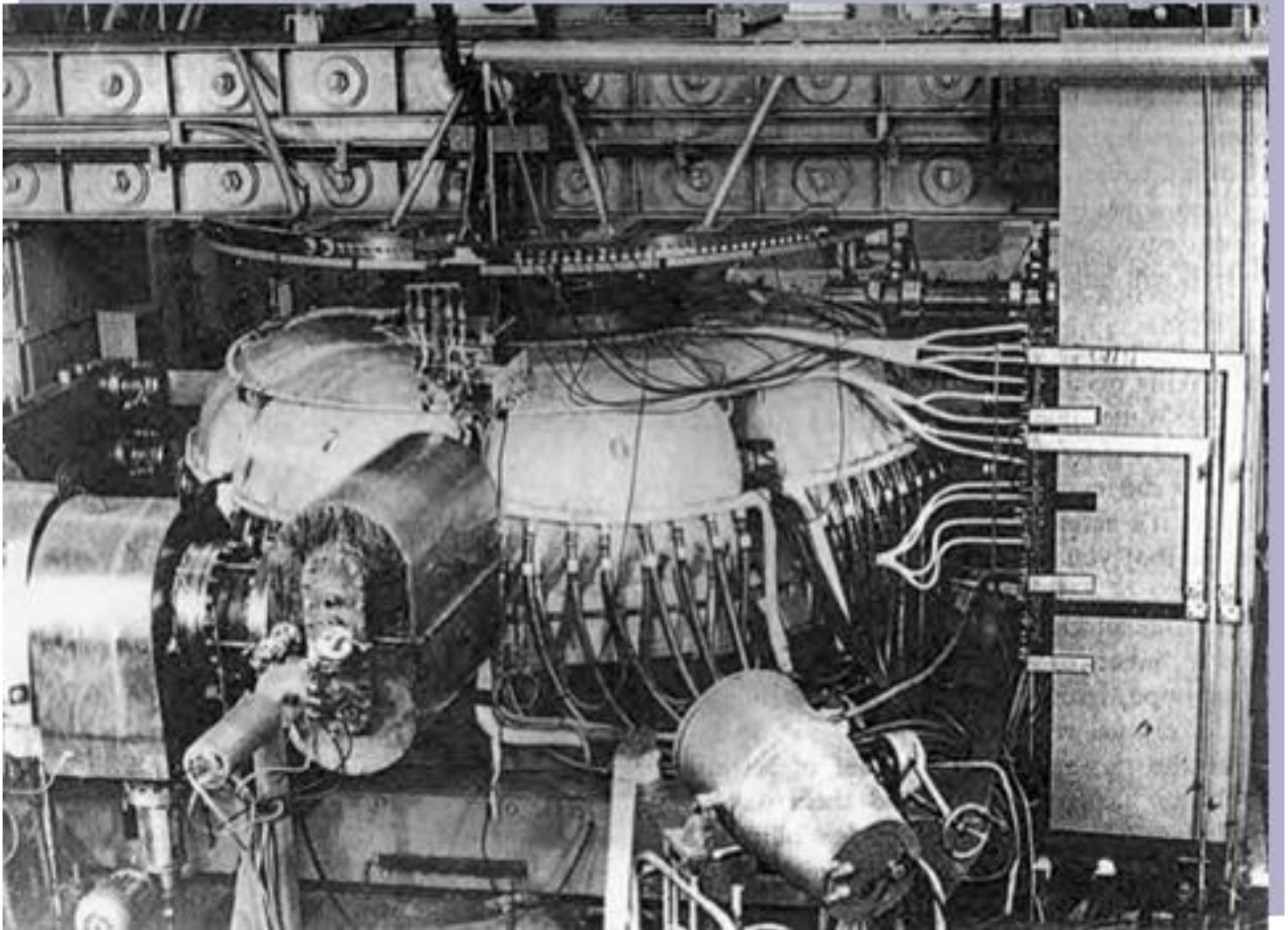
# Moskva, T-3



( $R=100$  cm,  
 $a=12$ cm)

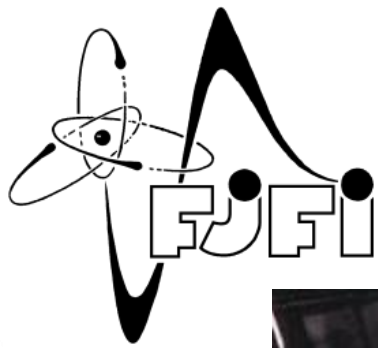


# Moskva, T-3

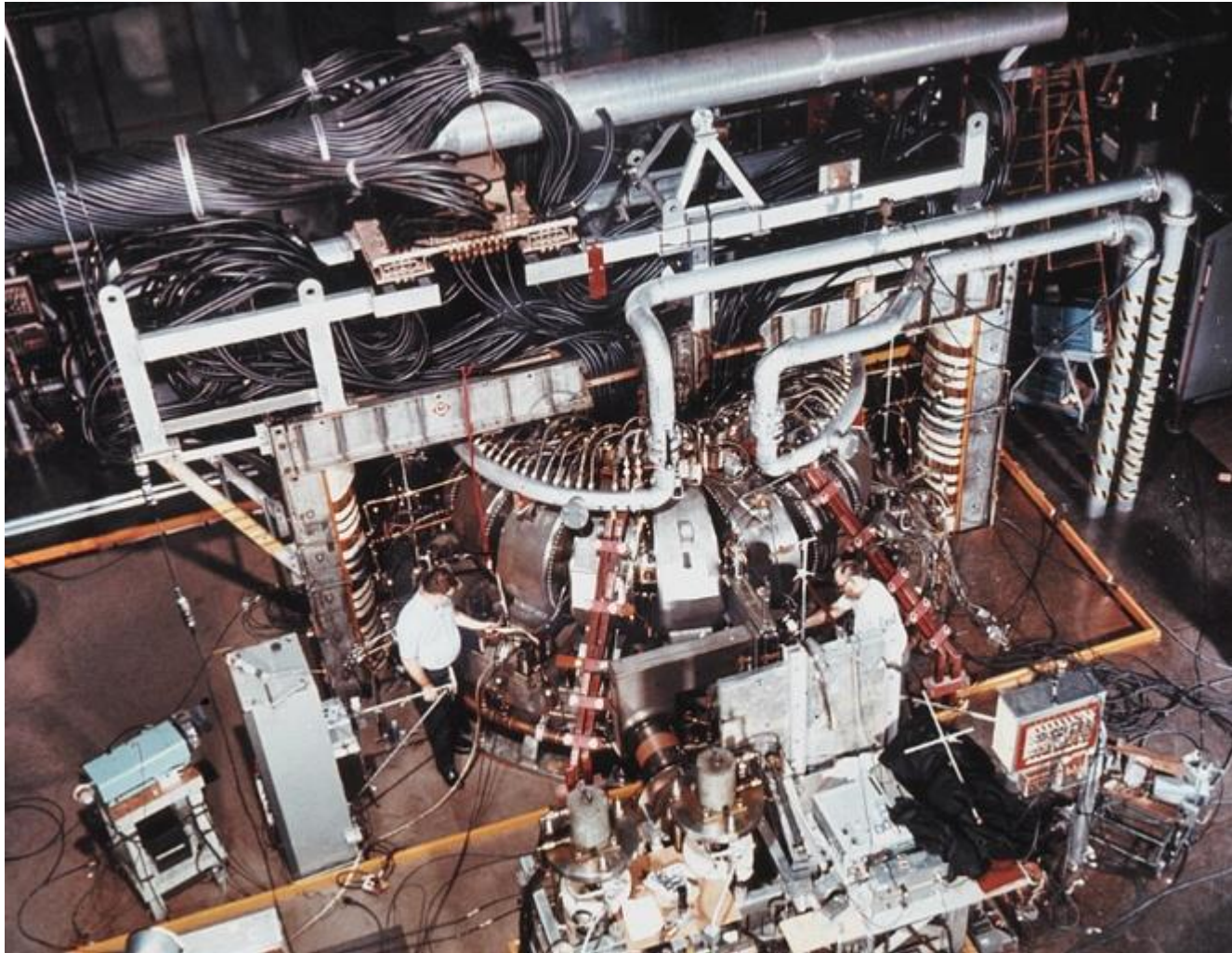


( $R=100$  cm,  
 $a=12$ cm)

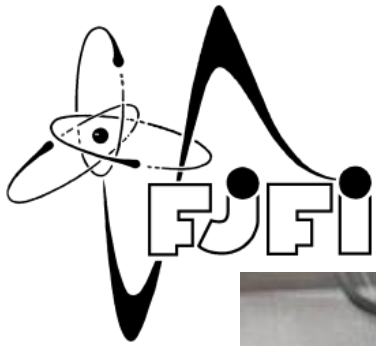




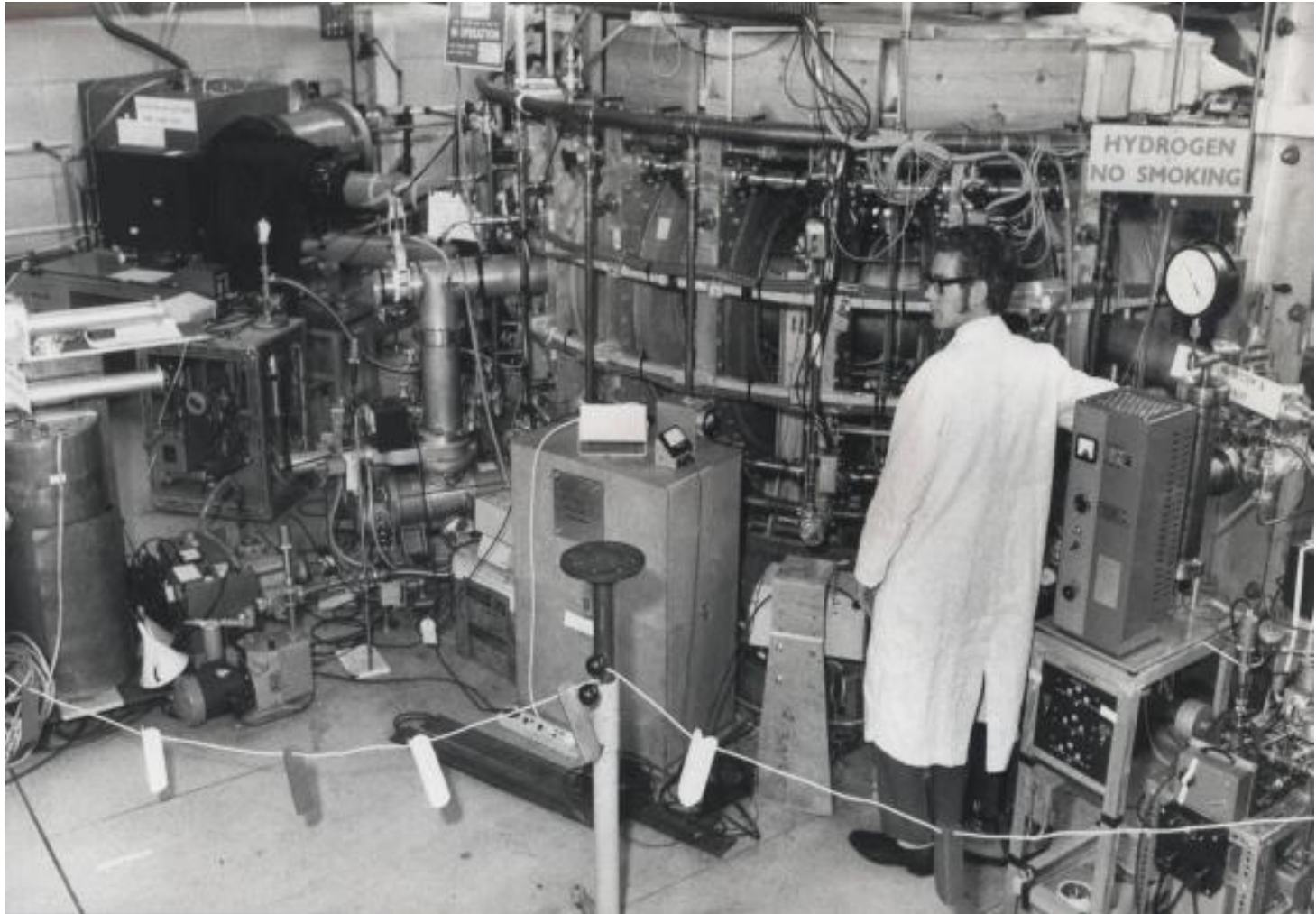
# Princeton, ST



( $R=101$  cm,  
 $a=13$  cm)

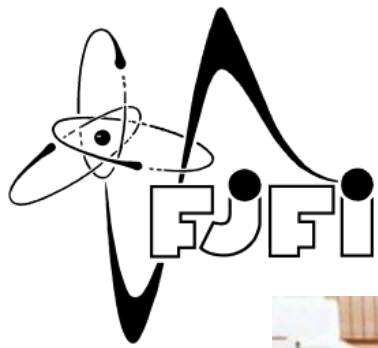


# UK, CLEO



( $R=90$  cm,  
 $a=13$ cm)

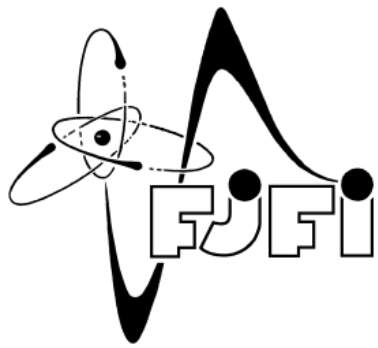




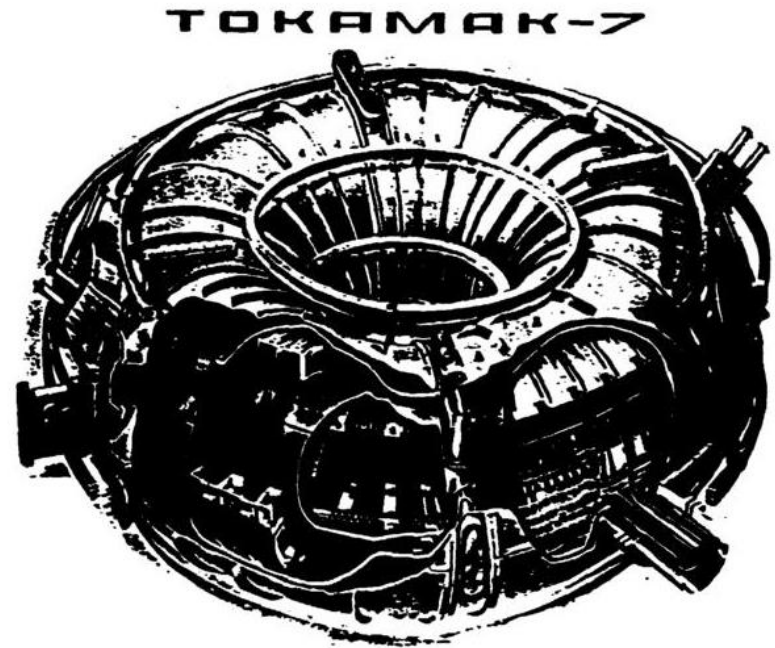
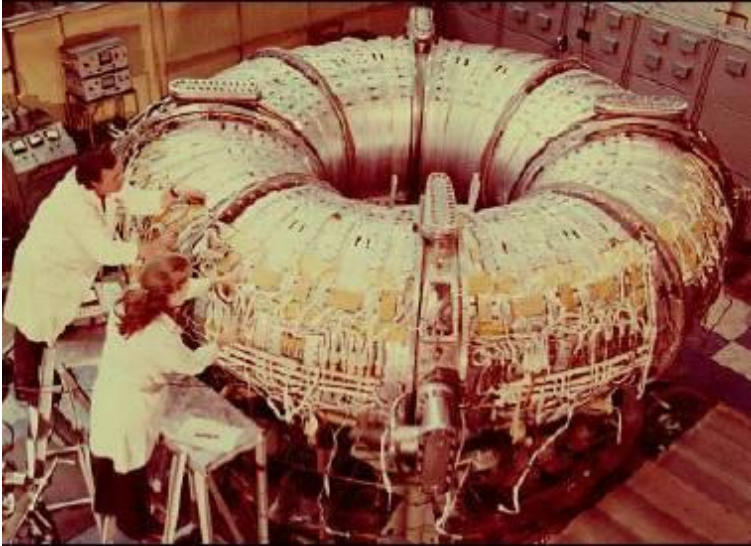
# Francie, TFR



( $R=100$  cm,  
 $a=20$ cm)



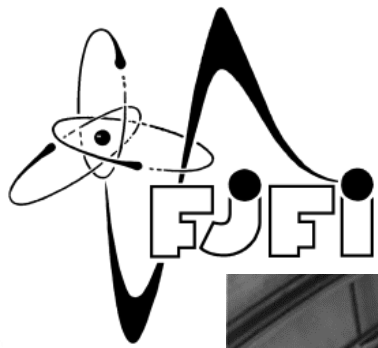
# Moskva, T-7



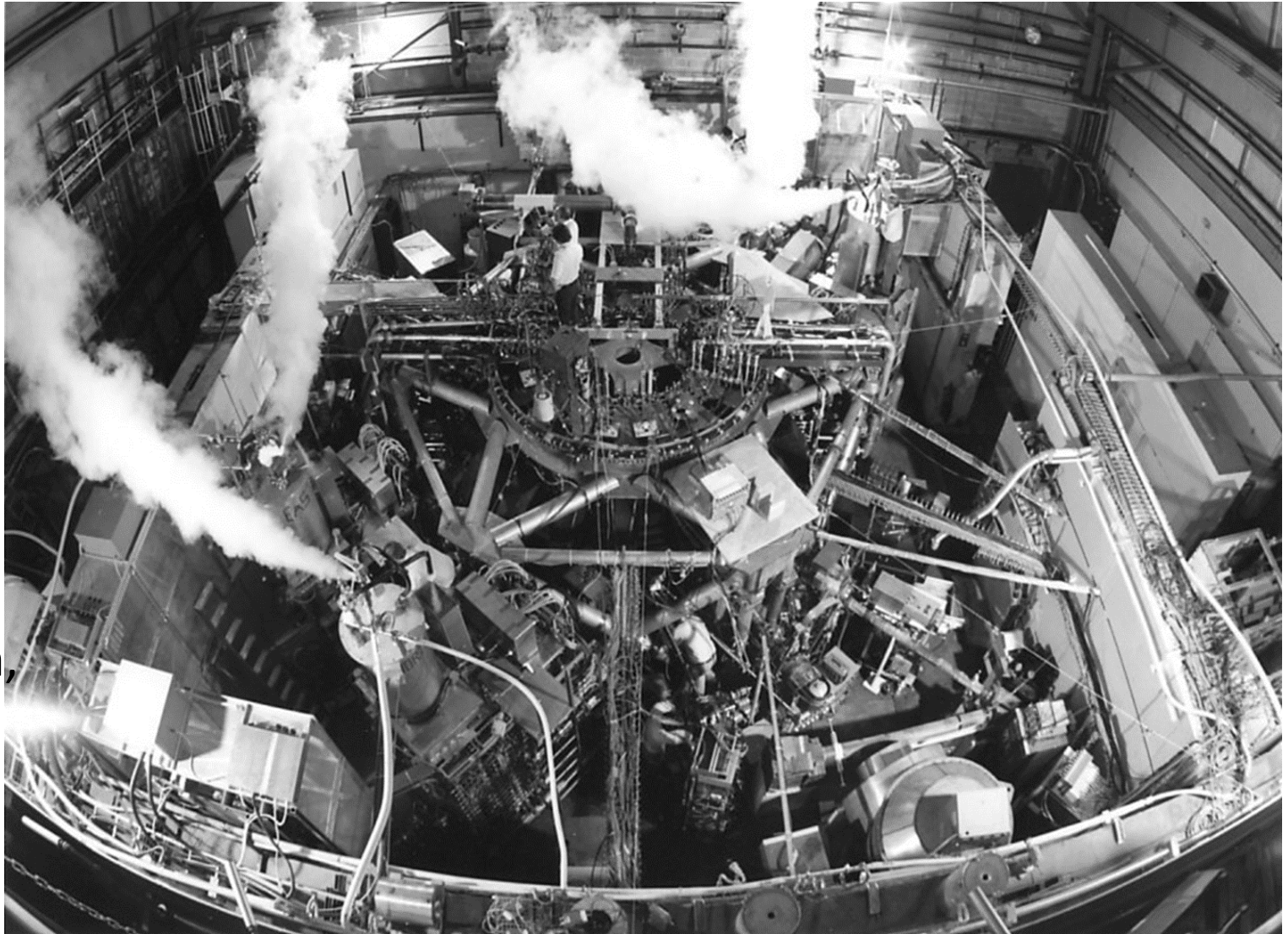
( $R=120$  cm,  
 $a=31$ cm)

Figure 28: Tokamak T-7: The first superconducting tokamak - 1968





# Princeton, PLT

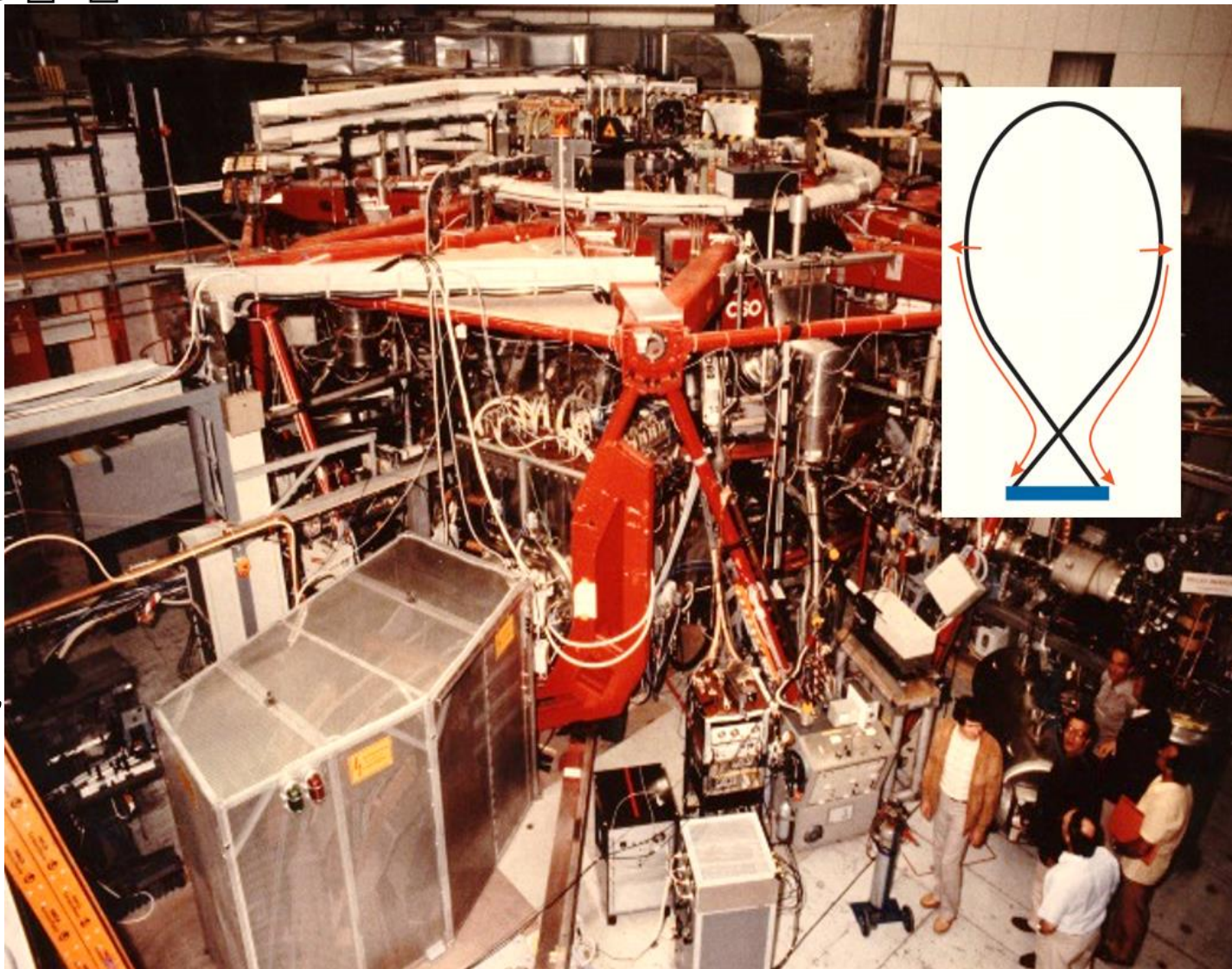


( $R=132$  cm,  
 $a=40$ cm)



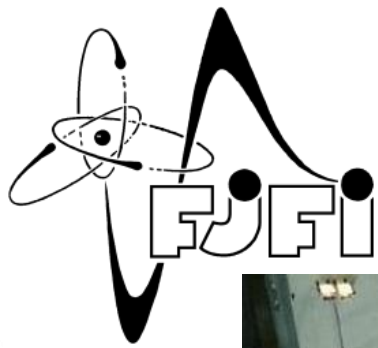


# Německo, ASDEX

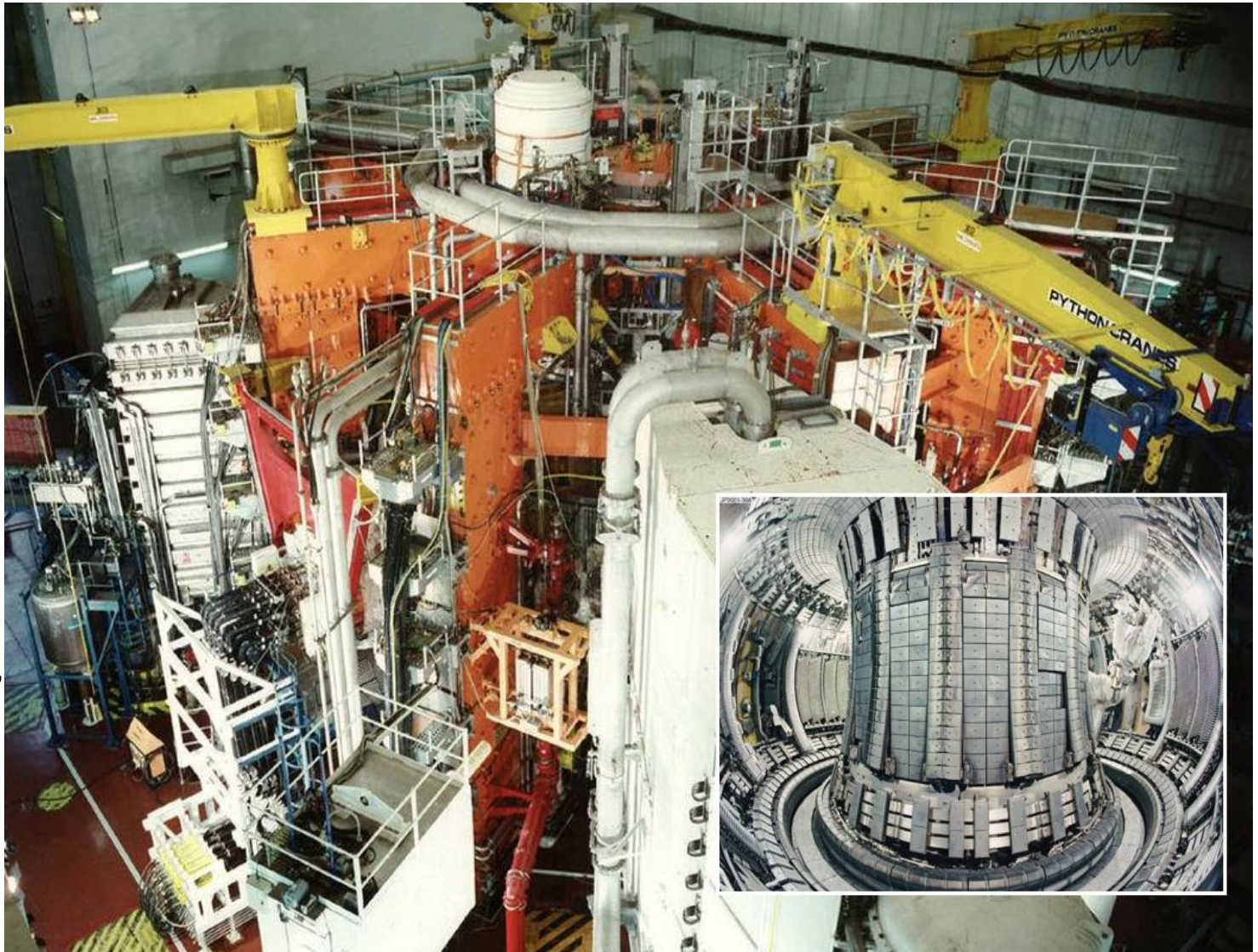


( $R=154$  cm,  
 $a=40$ cm)



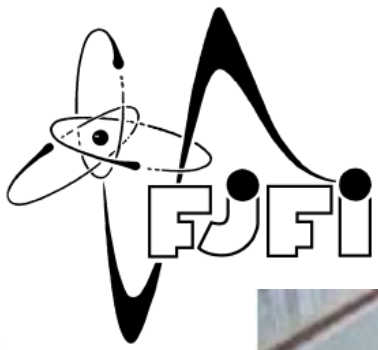


# Evropa, JET



( $R=296$  cm,  
 $a=96$ cm)



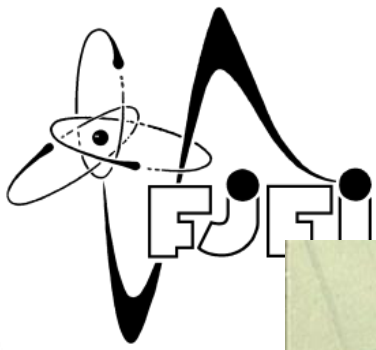


# Japonsko, JT-60(U)

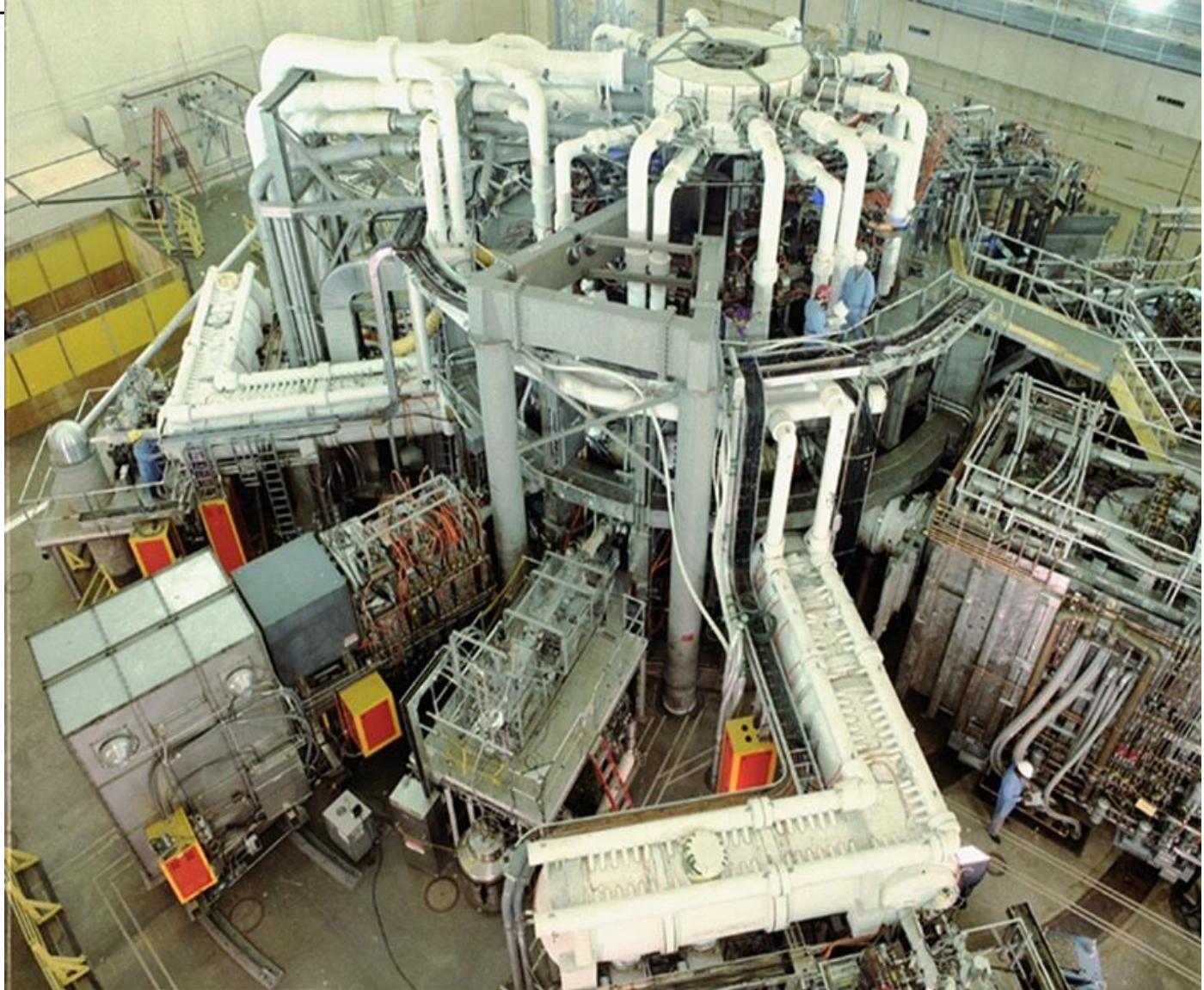


( $R=300$  cm,  
 $a=100$ cm)



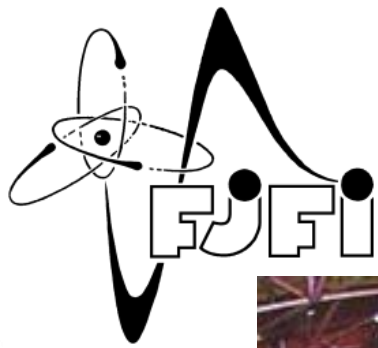


# USA, TFTR

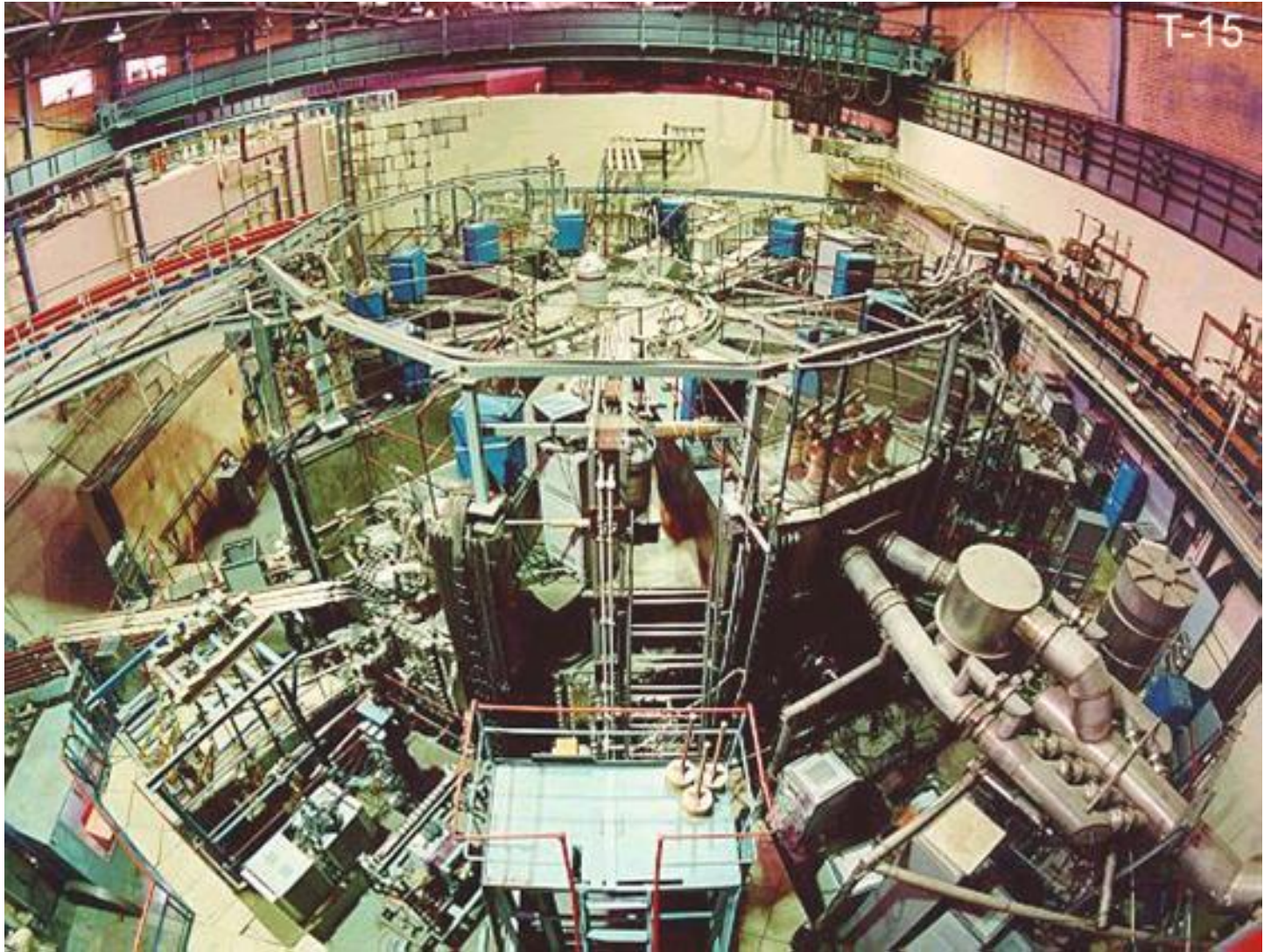


( $R=240$  cm,  
 $a=80$ cm)



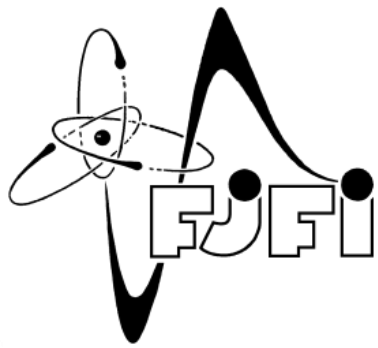


# SSSR, T-15



( $R=240$  cm,  
 $a=70$ cm)



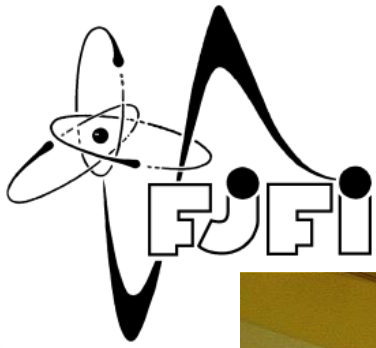


# Rusko, T-15MD

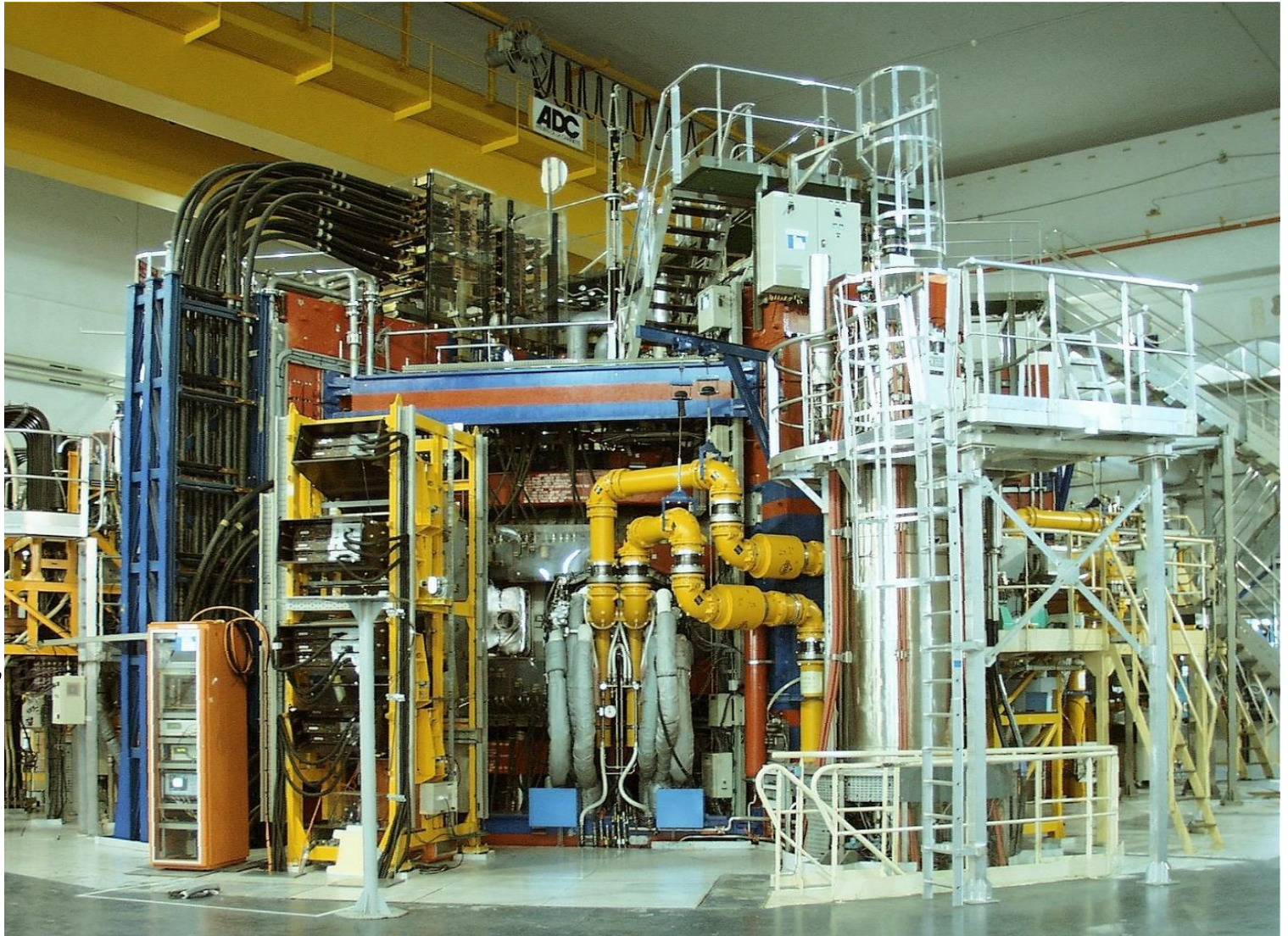


( $R=148$  cm,  
 $a=67$ cm)



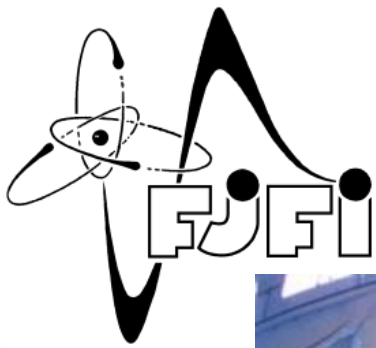


# Francie, Tore Supra



( $R=225$  cm,  
 $a=70$ cm)

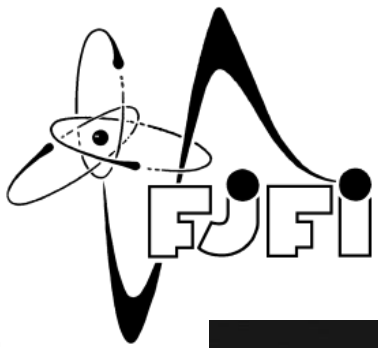




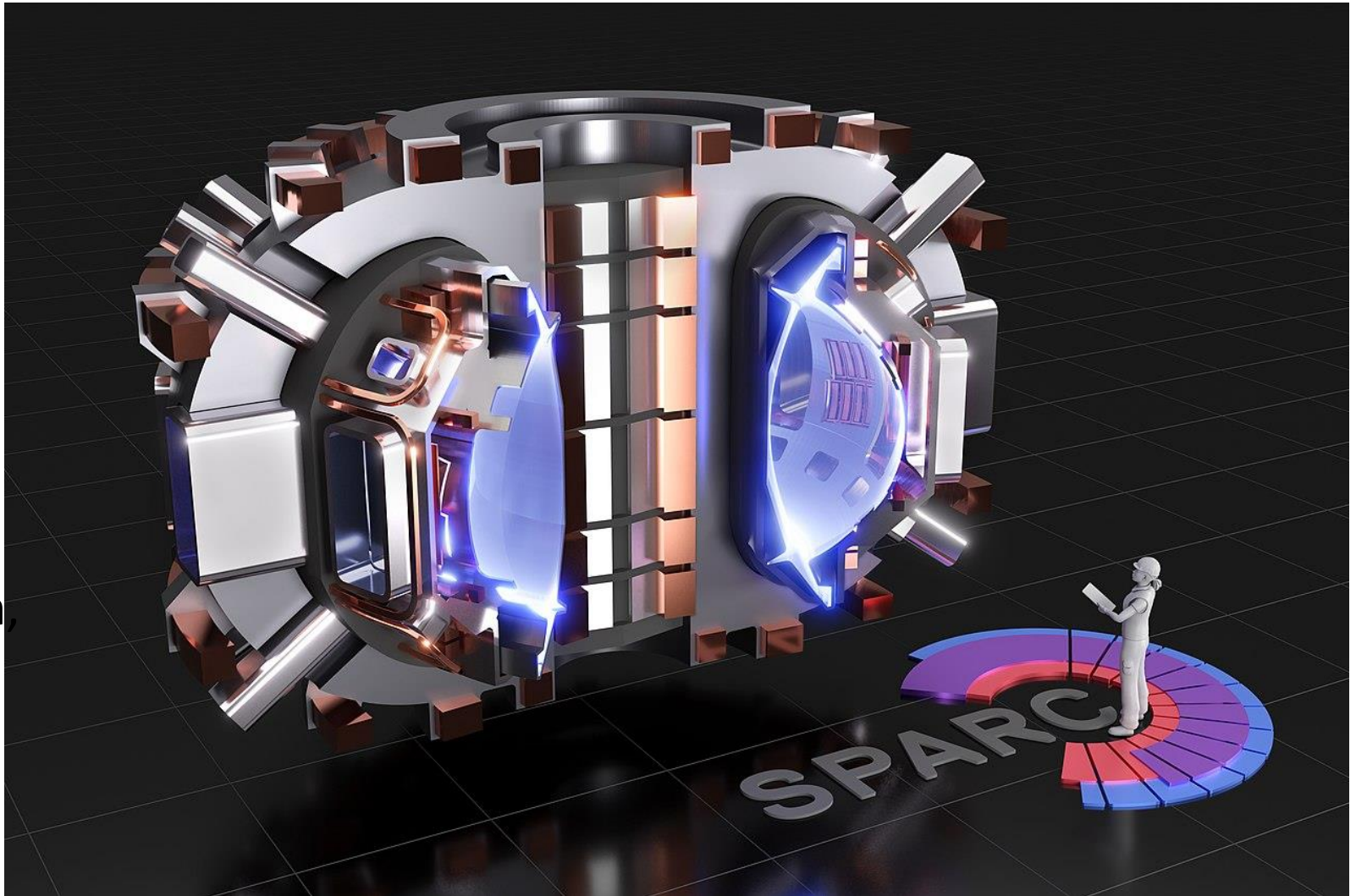
# Čína, HT-7



( $R=120$  cm,  
 $a=31$ cm)

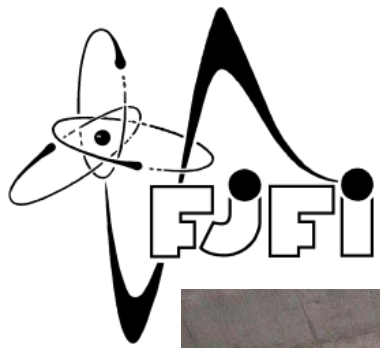


# USA, SPARC

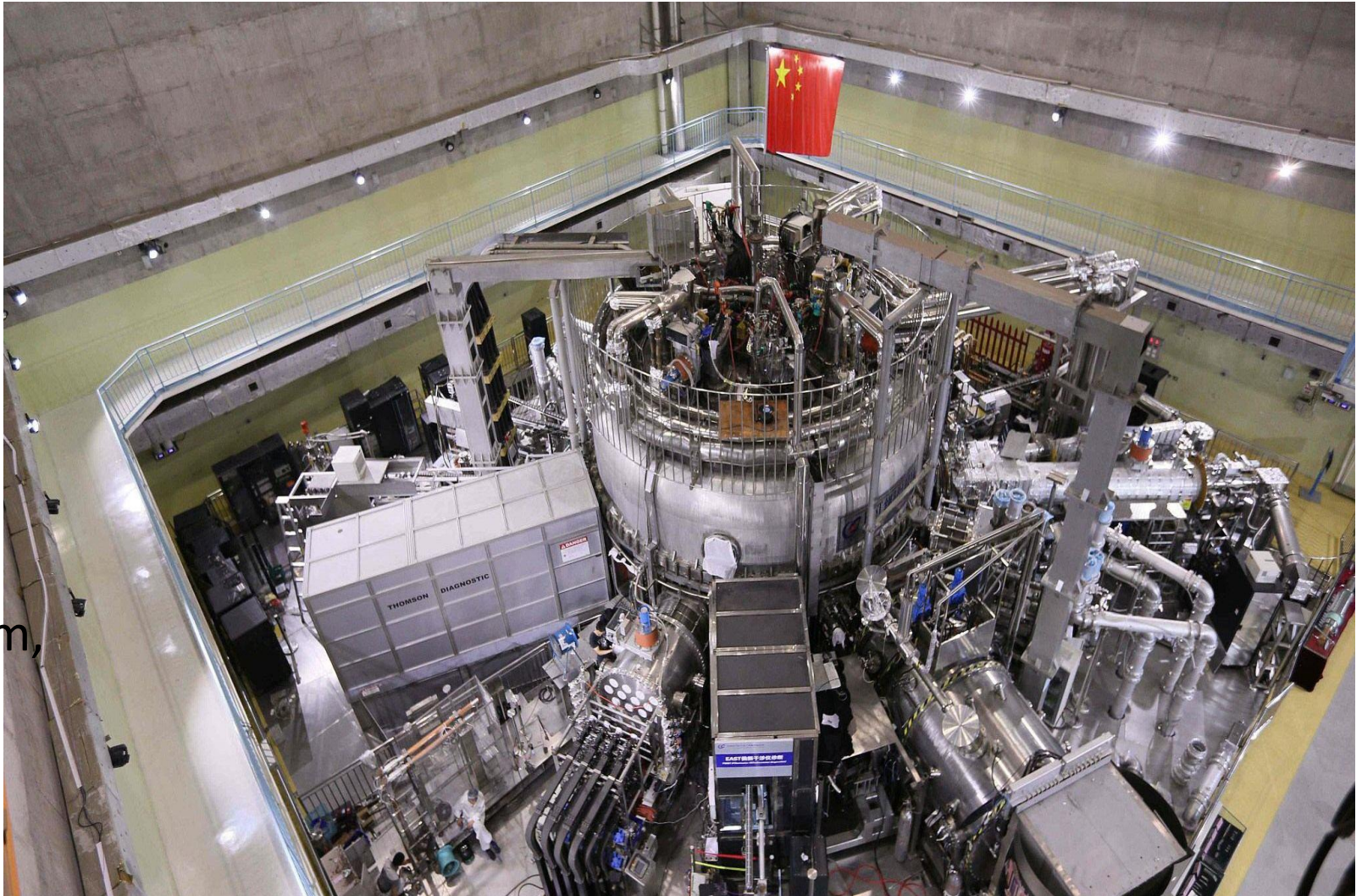


( $R=165\text{ cm}$ ,  
 $a=50\text{ cm}$ )



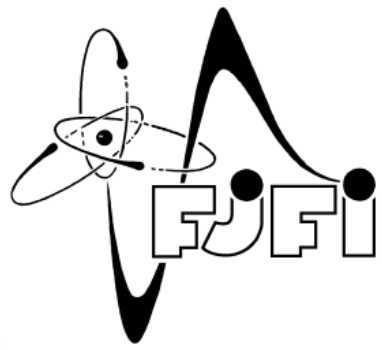


# Čína, EAST

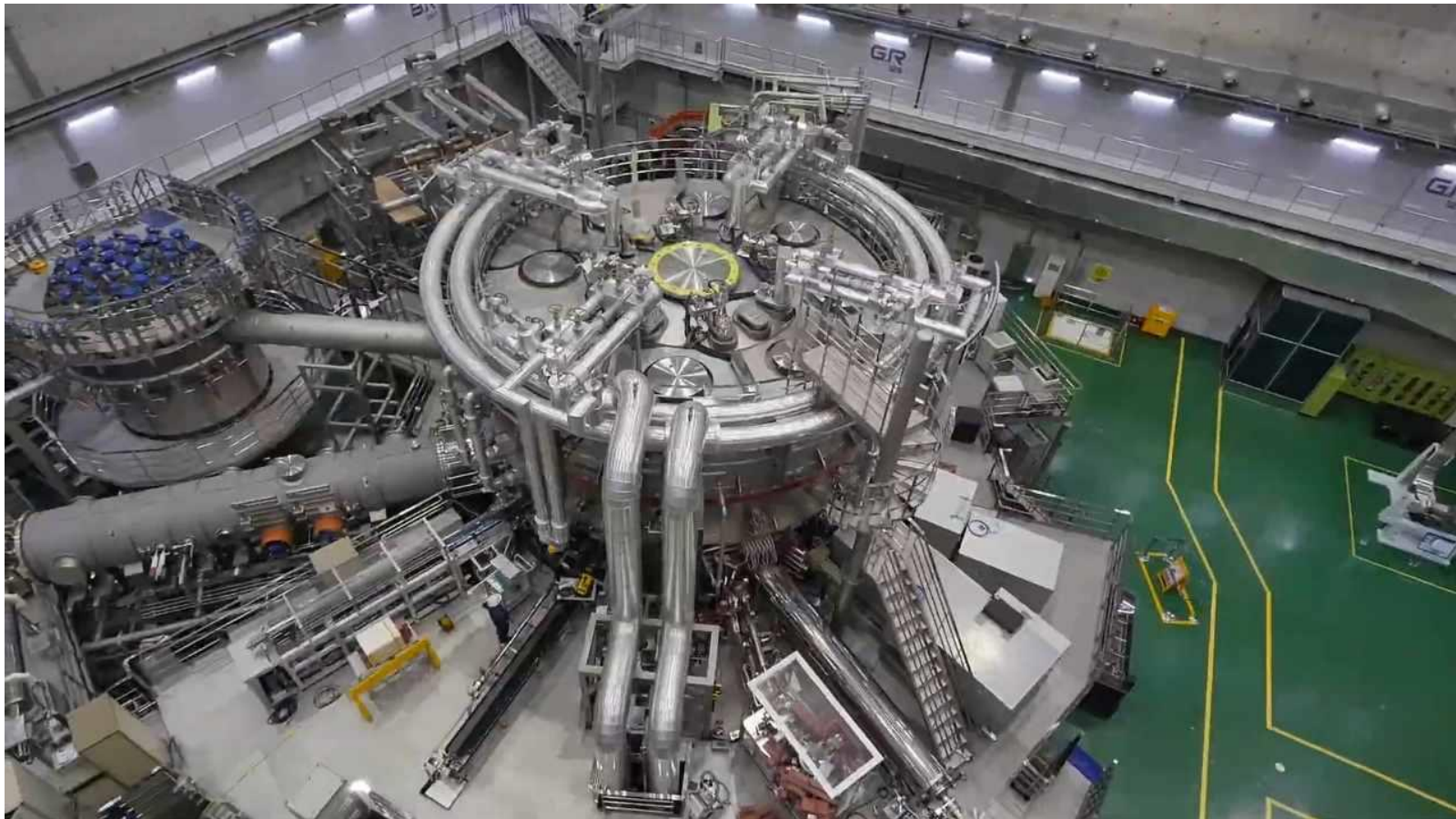


( $R=175\text{ cm}$ ,  
 $a=43\text{ cm}$ )



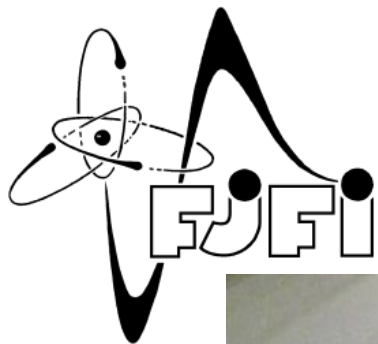


# Korea, KSTAR

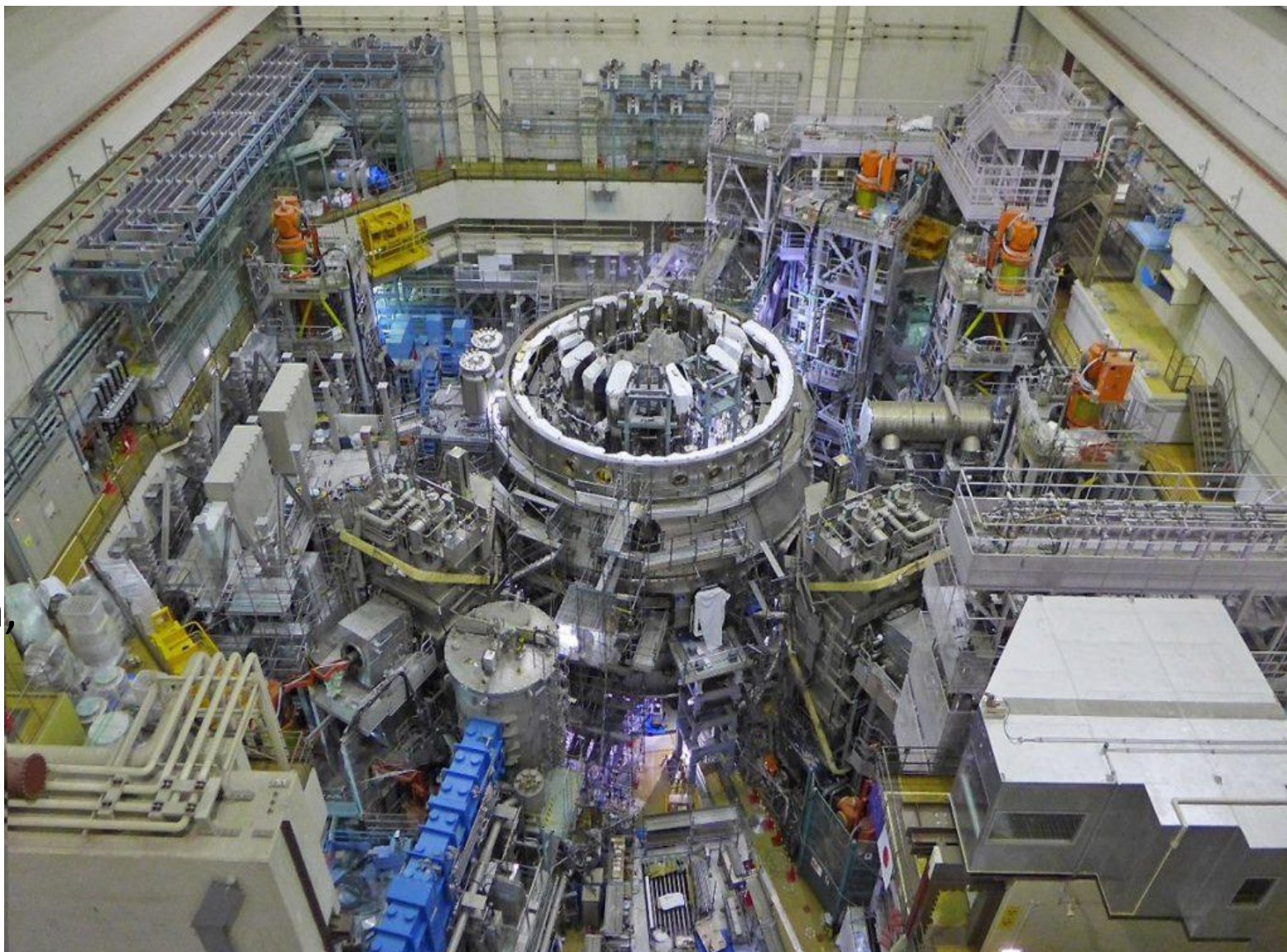


( $R=180$  cm,  
 $a=50$ cm)



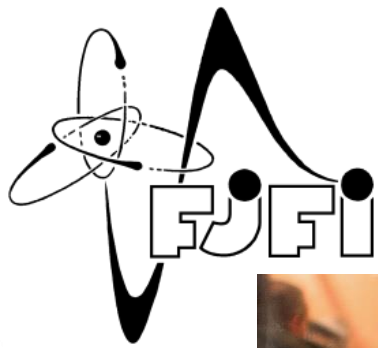


# Japan/EU, JT-60SA

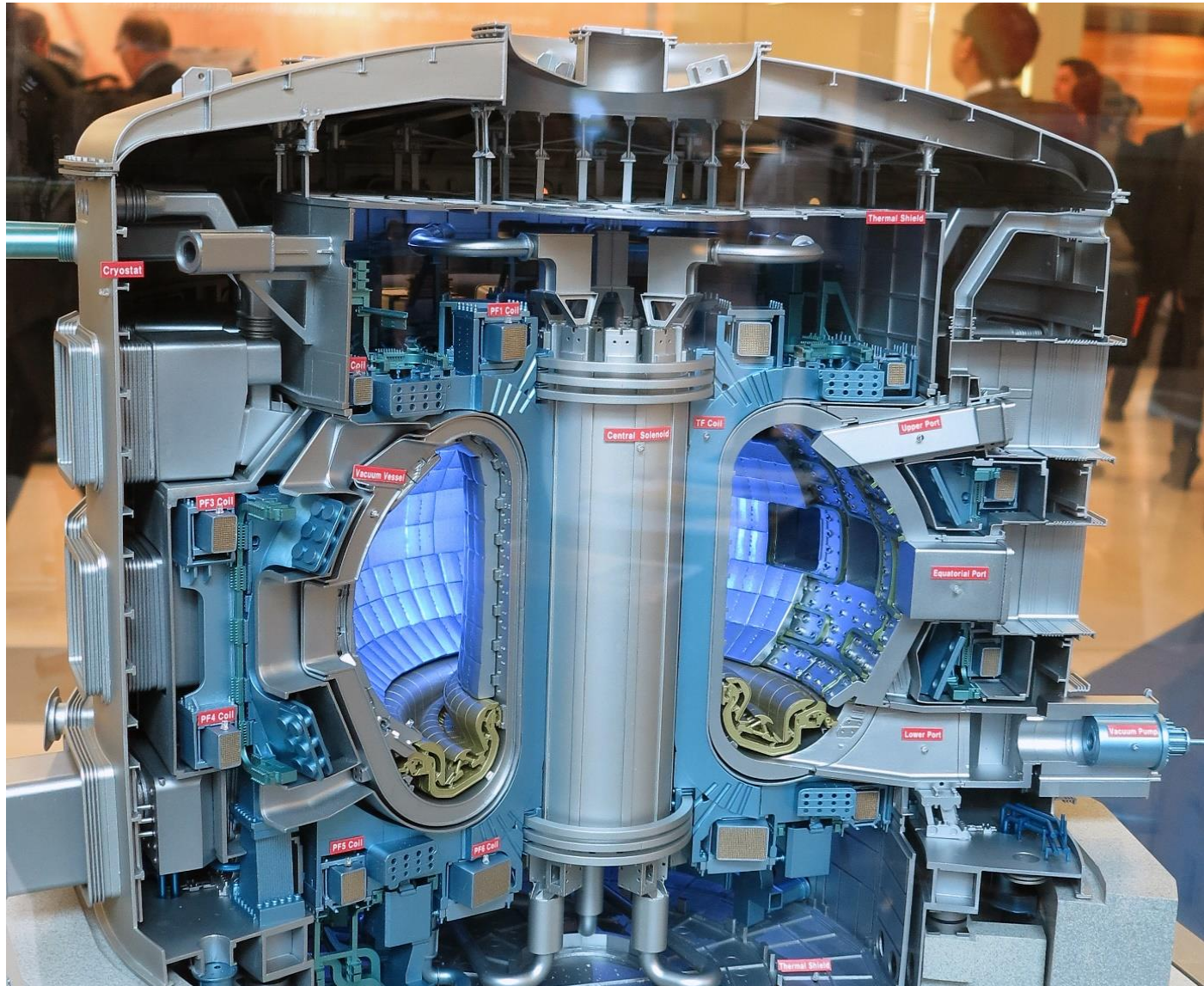


( $R=316$  cm,  
 $a=102$ cm)



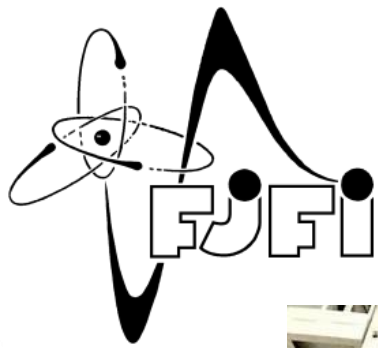


# 7 partners, ITER

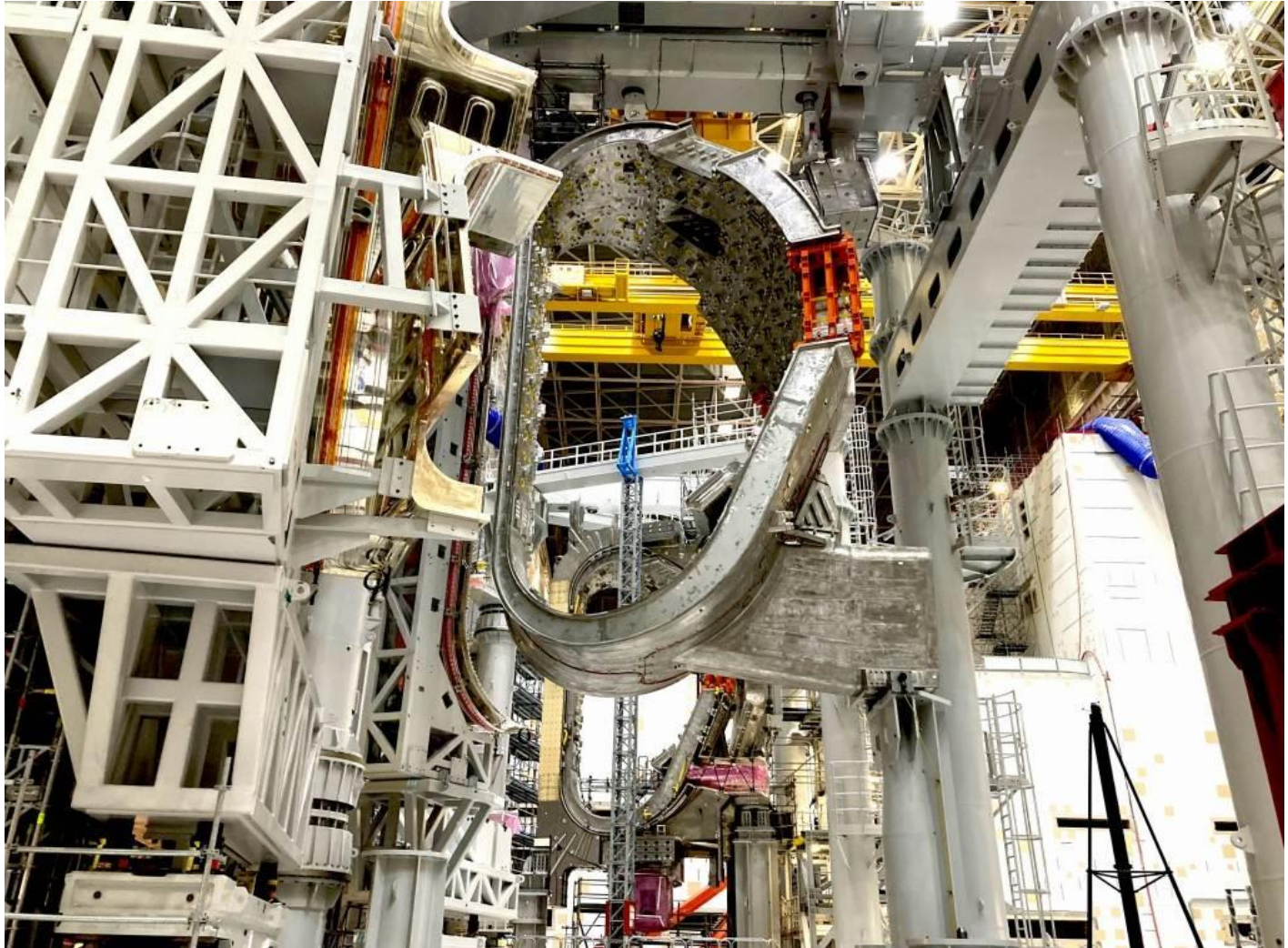


( $R=620$  cm,  
 $a=200$ cm)





# 7 partners, ITER



( $R=620$  cm,  
 $a=200$ cm)