Basics of Cryogenics

Cryogenics: below 123K

3 Method:

Vacuum by pump

Vacuum shell

Finite element analysis

O-ring seals

Radiation shields

Black body

Black body radiation

G10 supports

Steel 304

Kevlar

Thermal Straps

Heat Switches

Most gas switches

Cryogenic Liquids

Pulse tube refrigerators

Cryocooler capacity curve

Dilution Refrig (DR)

Helium-4 ~2.8K

Helium-3 liquid ~1mK