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## CRYOGENIC HEAT ANALYSIS OF LINAC CRYOMODULES

### Content :

A superconducting radio frequency LINAC is in operational at IUAC. LINAC consists of 24 accelerating cavities housed in three cryomodules operated at 4.2 K. In each cryomodule, the heat budget to 4.2 K is very crucial as it has direct consequence on the available cooling capacity of the helium refrigerator. The total heat of each cryomodule consists of static heat and dynamic heat due to Rf-power of the cavities during acceleration. Estimated cold mass at 4.2 K is about 550 kg in each cryomodule. During cool-down from 300 K, initial 60% of enthalpy of the cold mass is extracted by the natural thermal radiation and rest of the energy is extracted by the helium to cool down to 4.2 K. One of crucial aspect to minimize the heat is to identify the probable heat flow paths in each cryomodule both in static and dynamic condition of cavities. We have done a detailed analysis of the heat load based on few measurement at different parts of the cryomodule during operation of the cavities. This paper briefly discusses different direct and indirect sources of the static and dynamic heat load, analysis of the heat load and few examples of minimization of the heat flow in the cryomodule.

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