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Online quality factor measurement of the SRF cavity in Injector Cryo-Module of VECC Electron Linac

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Content :

The ANURIB facility being planned at VECC will use a super-conducting electron linac (e-Linac) as photo-fission driver. The e-Linac will initially be of 30 MeV, 2 mA with an optional upgrade to 50 MeV planned in the future. An identical e-Linac is being built for the ARIEL project at TRIUMF, Canada.

The 30 MeV e-linac is made using three 1.3GHz nine cell niobium cavities of Cornell-type, each cavity supplying 10 MV acceleration. The first 9-cell cavity is housed in a cryomodule called Injector Cryo-Module (ICM) followed by an Accelerator Cryo-Module (ACM) comprising two 9-cell cavities.

In the first phase, the ICM has been developed in collaboration with TRIUMF. The cavity operates at 1.3 GHz and 2 K. The paper highlights the online quality factor measurement of the ICM using calorimetric method.

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