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SRF cavity and HOM damper tests at TRIUMF for ARIEL
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The eLINAC for ARIEL[1] consists of 5 superconducting nine cell cavities operating at 1.3 GHz, each cavity with a accelerating voltage of 10 MV. The design requires a quality factor of $1 \cdot 10^{10}$ or higher at the operating temperature of 2 K for 10 W dissipated power in the cavity walls. Latest SRF[2] tests of a 1.3 GHz niobium single cell cavity will show that procedures at TRIUMF are capable of exceeding the RF requirements of ARIEL. Future upgrade plans for the eLINAC include a recirculating arc to either increase the energy of the 10 mA electron beam or drive an FEL[3] in ERL[4] mode. BBU[5] is a limitation in recirculating LINACs. Its strength depends on a number of parameters including the shunt impedance R_{Sh} of HOM,[6] especially dipole modes, of the SRF cavity. Using beam line absorbers made out of a low electric conductive material reduces the Q_L of the cavity and therefore reduces the R_{Sh}. Qualification of such a material is essential and measurements of the electrical conductivity of a candidate material will be presented in addition to the cavity tests.

[1]Advanced Rare Isotope Experiment Laboratory
[2]Superconducting Radio Frequency
[3]Free Electron Laser
[4]Energy Recovery LINAC
[5]Beam Break-Up
[6]Higher Order Modes

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