

Electron Cooling at ACR in MUSES,
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Accumulator Cooler Ring (ACR) is proposed for a storage
ring system named MUSES (Multi-Use Experimental
Storage rings) in RI beam factory project in Institute of
Physical and Chemical Research (RIKEN). In addition to
the stochastic cooling, the electron cooling [1] is expected
for the improvement of the ion beam quality in ACR. The
maximum accelerating voltage of the electron cooler device
is 300 keV and the gun solenoid field is 5 Tesla. The
diameter of cathode is 50 mm and the electron current is
4 A. The transverse electron temperature in cooling section
is reduced by the field expansion method with the
expansion factor 25. The electron trajectory calculation
shows the electron transverse velocity at the cooling section
becomes one fifth compared with that at the cathode. The
transverse electron temperature is about 0.1 eV. Some
extended calculation of the earlier work in cooling process
[1] is now in progress.

* Also in RIKEN.

[1] Y.N.Rao et al., Electron cooling at ACR, Proceeding
of EPAC '96.