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Status of the negative ion beam cooler at HRIBF J.F. LIANG, Y. LIU, G.D. ALTON, J.R. BEENE, Physics Division, Oak Ridge National Laboratory, U.S.A.[1], H. WOLLNIK, ZH. ZHOU, II. Physikalisches Institut, Universität Giessen, Germany — An ion cooler consisting of a deceleration stage, gas-filled RF quadrupole where ions are cooled by collision with a buffer gas, and an acceleration stage was constructed at the Holifield Radioactive Ion Beam Facility. When radioactive beams are produced, the desired species are often accompanied with neighboring isotopes and iosbars of higher intensity. With the ion cooler, the emittance and energy spread of ion beams can be reduced and the resolving power of mass separators using sector field magnets can be significantly improved for cooled beams. The ion beam cooler has been tested with positive and negative ions at the Ion Source Test Facility. The performance of the cooler was evaluated with a high resolution electrostatic energy analyzer system, located after the cooler, to measure the energy spread of beams. The transmission efficiency of the ion cooler was determined by comparing the beam intensity in Faraday cups located before and after the cooler. For $^{19}F^-$ ions, an energy spread of < 2 eV at FWHM and transmission of 17% were achieved to this date. Further improvements of the cooler will be discussed.

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