

Study of Magnet Power Supply for MUSES Booster Synchrotron, S.I. WATANABE, INS, Univ. of Tokyo
- MUSES-BSR is a synchrotron with a repetition rate of 1 Hz which has a flat bottom and a flat top magnetic field. The maximum energy of BSR is 2.8 GeV for protons and of VSR is described precisely elsewhere in this conference report. The time-derivative of magnetic field in the phase of beam acceleration, is expected up to 5.99 T/s. The estimated power consumption at the full excitation of bending magnet system is 7.614 MW. The power supply comprises thyristor, LC filter, dynamic filter and current regulation loop. The current regulation loop comprises a voltage feed-forward, ACR and VCR loops. R & D program for the power supply for the VSR is focused on a reliability of excitation current as well as suppression of ripple current. Computer study and model test have been done to develop the high-power components of the power supply. The magnet strings providing the highly magnet impedance against ripple component was also studied. This paper summarises the difficulties encountered and suggests improvements of the circuit model.