

Overview of the Power Conversion Systems for the RHIC Project*, R.F. LAMBIASE, BNL - The RHIC Project, in construction at Brookhaven National Laboratory, will have its magnets powered with over a thousand individual power converters. The main dipole and main quadrupole magnet strings are powered separately. At the regions near the crossing points, beta* is tuned with both trim quadrupoles and shunts to the main quadrupole string. The dipoles near the crossing points are also controlled by shunt supplies. In addition, there are many correction supplies that are used either for individual magnets, or families of magnets. As a group, the RHIC power converters range in size from the 2.2 MW peak main dipole ramping supplies to the 625 W bipolar corrector power supplies. The technologies used vary from unipolar phase control to bipolar switch mode. Power to the ring magnets is distributed from the largest converters by way of superconducting cables, while the smaller units are connected with conventional copper cables. This paper is an overview of the RHIC power converters, their distribution systems, and progress in their construction.

* Work performed under Contract No. De-AC02-76CH00016 with the U.S. Department of Energy.