

**Suppression of Bunched Beam Induced Heating at the DCCT Toroid, T. HONDA, Y. HORI, M. TADANO, Photon Factory, KEK** - The DC current transformer (DCCT) measuring the stored current of the PF ring encountered a heating-up problem under the single-bunch operation mode. At the PF ring, which is a 2.5 GeV synchrotron radiation source with its circumference of 180 m, single-bunch experiments are scheduled several times a year. The stored current was 60 mA typically. In the single-bunch mode, the temperature of the sensor toroid increased to over 70 degree C. Slow but large fluctuations of the measured current and some error in the absolute value were observed frequently followed by the temperature rise. The heating at the DCCT was attributed to the eddy current induced by the bunched beam. There was a ceramic gap inside the DCCT toroid in order to break the vacuum tube electrically. The high-frequency noise from the beam invaded the toroid through the gap. We have installed another DCCT with a new ceramic gap designed to have a large electric capacitance. The gap was constructed by a thin ceramic plate of the thickness 0.5 mm, and had a capacitance of about 3 nF. The temperature rise for the new DCCT was observed to be smaller than one tenth of that for the old DCCT and remarkable reduction of the noise power invading the sensor toroid was achieved. As a result, it becomes possible to measure the stored current with sufficient stability and accuracy even under the single-bunch operation with high current over 100 mA.