

Calculation of the Pressure Profile for the PLS Vacuum System

C.D. Park, H.J. Kim and W.C. Choi

Pohang Light Source Project,

Pohang Accelerator Lab.

Pohang Institute of Science and Technology

Abstracts

A finite element analysis and Monte Carlo method have been applied to calculate the pressure profiles around the Pohang Light Source (PLS) electron storage ring with the aim of predicting the performance of the vacuum system designed for the PLS vacuum system. After properly choosing the design parameters, the pressure distribution are calculated as a function of the integrated stored beam current [AmpHrs]. The effect of changes of the vacuum parameters, such as installed pumping speeds and synchrotron radiation induced gas desorption rates on the pressure profile, is also studied. The results indicate that the use of lumped non-evaporable getter pumps together with sputter ion pumps for pumping the PLS down to the required pressure is possible in the presence of synchrotron induced gas loads, after reasonable beam cleaning time.