**Study of the Fast Beam-Ion Instability in the Pohang Light Source**, J.Y. HUANG, I.S. KO, M. KWON, T.Y. LEE, PAL/POSTECH Pohang, Korea and Y.H. CHIN, H. FUKUMA, KEK, Japan - The fast beam-ion instability has been studied experimentally in the Pohang Light Source. As the vacuum pressure increased by turning-off ion pumps or by leak of the Helium gas into the storage ring chamber, the fast beam-ion instability was excited spontaneously. The bunch tail oscillation and the bunch size blow-up were directly observed from the transient signals obtained by a streak camera and a fast beam position monitor. The frequency of the bunch oscillation agreed well with the linear theory, but the oscillation amplitude blew up intermittently to a large triangular waveform. Also observed was the decoherence effect of the oscillation by two gas species: CO and He. In particular, the fast beam-ion instability was excited spontaneously at only 1 nTorr of vacuum pressure, strongly indicating that the fast beam-ion instability is an observable not only in the future accelerators, but also in the existing electron storage rings.