

Fast Beam Accumulation by Electron Cooling in the Heavy Ion Synchrotron SIS, M. STECK, K. BLASCHE, W. BOURGEOIS, B. FRANZKE, L. GROENING, GSI Darmstadt; N.S. DIKANSKY, V.I. KUDELAINEN, V.V. PARKHOMCHUK, A.I. SHARAPA, A.V. SHEM YAKIN, BINP, Novosibirsk - At the heavy ion synchrotron SIS a fast beam accumulation scheme employing electron cooling is foreseen in order to gain both higher beam intensity and better beam quality. For highly charged ions at the injection energy of 11.4 MeV/u transverse cooling times of less than 100 ms are expected. Such short cooling times will allow repeated multiturn injection into the same phase space volume which will be compressed by electron cooling. Since the intensity of the heaviest ions is presently limited by the ion sources of the UNILAC injector an increase of the average beam intensity by up to one order of magnitude has been estimated. Even for the maximum beam intensity the emittance will be reduced by a factor of five compared to the standard multiturn injection. The electron cooling device has been technically designed and is presently manufactured. Commissioning of the electron cooler and first beam accumulation is scheduled for the middle of 1997.