**Suppression of Space Charge Induced Beam Emittance Growth in Transport Line**, Y. BATYGIN, A. GOTO and Y. YANO, RIKEN - Nonlinear space charge forces of laboratory beam can produce strong emittance growth in linear focusing channel due to mismatching of the beam profile with focusing field. To obtain matching conditions for a beam with an arbitrary distribution function, it is necessary to accept that the potential of the external focusing field is a highly nonlinear function of radius. The solution for external potential is obtained from the stationary Vlasov's equation for beam distribution function and Poisson's equation for electrostatic beam potential. Gradual change of nonlinear focusing field results in adiabatic transformation of the beam with initial nonlinear distribution into the beam, matched with the linear focusing channel. Ideal way to create required potential distribution is a plasma lens with specific distribution of the opposite charged particles. Another variant is an alternative-gradient quadrupole structure with higher order multipole components. An analytical approach is illustrated by results of a particle-in-cell simulation.