last time in all electron dynamics calculations influence of particles uncaptured in acceleration mode was neglected. Nevertheless, all experimenters know about such particles availability in energy spectrum at accelerator output, sometimes in quantity, considerably exceeding number of accelerated particles. The amount of such particles is determined not only by preliminary bunching conditions but different instabilities also. In this work the results of theoretical and experimental research of uncaptured electrons transportation in the traveling wave linac are given. It was determined, that such particles are focusing by the accelerating wave fields. This focusing can be strong enough to overcome the influence of transverse magnetic field. The calculations were made for a 50 keV electron beam transporting in a 10 cm wavelength traveling wave field with input power up to 10 MW propagating in accelerating structure of 4,4 m length based on the iris-loaded waveguide. The wave phase velocity in the structure is close to a speed of light. At the middle of this structure there was a 1 m length region with a 6 Gs intense transverse magnetic field. The experiments carried out have shown that no beam particles reach the structure exit if there is no microwave power in the waveguide. From the other hand, the presence of traveling wave in the structure allows the transportation of beam particles practically without any losses up to structure exit. It confirms a hypothesis of the focusing mechanism presence for nonsynchronous particles transportation in the traveling wave fields and necessity of their account. The comparison of theoretical and experimental results has shown a good concurrence, that testifies for the benefit of applicability of the developed theoretical methods for the account of this factor in linacs calculations.

THP04F

DYNAMION - A New Multiparticle Simulation Program for High Current Ion Linacs, A. KOLOMIETS, I. VOROBYOV, S. YARAMISHEV, ITEP; J. KLABUNDE, GSI - The features of the newly developed multiparticle simulation code DYNAMION is presented. It solves the general three dimensional equations of charged ion motion in arbitrary external fields taking into account the internal space charge forces. External fields can be defined by analytical formula, measurements or field tables calculated by means of computer codes like MAFIA. The code has been tested by simulation of GSI accelerators such as the 27 MHz-RFQ, 108 MHz-RFQ and ALVAREZ. The results are compared with data obtained by other simulation codes - PARMILA, PARMTEQ, PARMTRA. Especially, DYNAMION has been developed for beam lines including strippers and bending magnets. The space charge effects of the beam composed by ions of different charge states can be computed.

THP05F

Beam Dynamic in the Transmission Section of the High Current Linear Accelerator, A.S. PASHENKOV, INR - The transition section (TS) between low and high energy parts is a critical component of any high current linear accelerator. The motivation for these researches, design parameters and schematic layout for the modern linac are presented. The method of optimization of the TS - choosing of the synchronous phase, accelerating field and length is also presented. Basic concepts are applicable to any type of the high current linac. As example the problems of the bunch matching and particle losses in the 600 MeV Moscow Meson Factory linac are considered.

THP06F

Effect of Nonlinear Detuning on the VEPP-4M Dynamic Aperture, A. DUBROVIN, E. LEVICHEV, V. SAJAEV, D. SHATILOV, E. SIMONOV, V. SMALUK, BINP Novosibirsk - We have studied experimentally the dynamic aperture of the VEPP-4M storage ring both by fast kicker and movable scraper. The chromaticity correcting sextupoles were considered as a main perturbation while octupole corrections were used as a source of the amplitude dependent tune shift. The dependence of the dynamic aperture on the nonlinear detuning was investigated and compared with results obtaned by simulations and analytic prediction.

THP07F

Resonance Approach to the Dynamic Aperture Evaluation at Synchrotron Light Source, E. LEVICHEV, V. SAJAEV, BINP Novosibirsk - At synchrotron light sources the main nonlinear perturbation is caused by chromaticity compensating sextupoles. It is shown that in this case dynamic aperture is limited by sextupole resonances described by the first orders of perturbation theory. Analytic expressions for dynamic aperture have compact form for synchrotron light source, for which simple valuation of the main resonance driving terms proceeding from fundamental accelerator parameters is possible. Higher order resonances do not directly define a dynamic aperture but can decrease it by the islands overlapping.

THP08F

Kinetics of 3-D Ionization Cooling of Muons, T.A. VSEVOLOZHSKAYA, BINP, Novosibirsk - An analysis of efficiency of 3-dimensional ionization cooling of muons is performed with the use of the transport equation approach in a scheme with curved lithium lenses.

THP09F

Experimental Study of Impedances and Instabilities at the VEPP-4M Storage Ring, V. KISELEV, V. SMALUK, BINP, Novosibirsk, Russia - Beam current in the VEPP-4M electron-positron collider is limited by the fast head-tail instability, occurred due to an interaction between the beam and wake fields. Threshold current is determined by the transverse impedance of the vacuum chamber. The transverse impedance was measured by beta function variation. For study of the longitudinal and transverse impedances in frequency domain, deviation of equilibrium RF phase and coherent betatron tune shift were measured in dependence on various beam length. Longitudinal and transverse local energy loss factors were studied also, using measurements of closed orbit and betatron phase advance deviations in dependence of beam current. Beam evolution after injection was observed by a beam position monitor using turn-by-turn measurement technique. Beam motion was studied by computer simulation based on the two particle model. Results of the simulation are in good agreement with the experimental data. The way to suppress the instability is a feedback system for stabilization of coherent dipole beam oscillations.