

Loss of Landau Damping due to Space Charge Effects, J. FEIKES, DESY - Although the nonlinear detuning in HERA-p should be large enough to cure any of the common transversal instabilities the proton beam at injection and during the first part of the ramp often shows strong excitations, beam blow up and even beam loss. Obviously Landau damping is lost, but none of the usual collective effects should be strong enough to cause such a strong reduction of the inherent damping. Here it is shown that for typical HERA sextupole distributions the combined action of coherent and incoherent space charge tune shift must lead to a strong reduction of the effectiveness of Landau damping. The effect is explained and we will show how the experimental observations can be deduced from this picture.