Progress on Intense Proton Beam Dynamics and Halo Formation, K. BONGARDT, M. PABST, FZJ, Germany; A. LETCHFORD, RAL, U.K. - A major problem in the design of high intensity proton linacs is how to avoid particle losses. Losses cause activation of accelerator components and make unconstrained maintenance difficult. In a linac, losses occur radially due to the formation of a beam halo. Therefore it is important to understand the halo production mechanism and the dynamics of these halo particles. In addition, filamentation of the particle distribution in the longitudinal phase space can cause activation problems when injected into a ring. Halo production is enhanced by either transverse or longitudinal mismatch. In recent years, progress has been made in understanding halo production in mismatched DC beams. The mismatch of DC beams is described by 2 well known eigenfrequencies. For bunched beams we approximated the 3 eigenfrequencies analytically. These frequencies depend only on the full and zero current transverse and longitudinal tunes. Transverse and longitudinal halo production in mismatched bunched beams has been studied by Monte Carlo simulation for different linac designs. Criteria are presented which result in designs with low transverse and longitudinal emittance growth and reduced halo production for currents up to 200 mA.