Code Comparison in RF-GUN Simulation[*],

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For comparison of the 3 codes: ATRAP based on Lienard Wiechert potentials, ITACA PIC code and PARMELA particles pushing code, we choose a geometry independent model with external RF and magnetostatic fields analytically specified. We do this comparison for high charge bunch at moderate accelerating gradient and low charge bunch at high accelerating gradient. The wakefield effects from the irises are neglected. A set of parameters are plotted along the structure as a function of the average bunch position, like rms beam radius, rms bunch length and normalized transverse rms emittance. We obtain a good agreement in results, with difference between CPU times. An important point seems generation of particles, as well as time and space step resolution for very low emittance space charge dominated beams.