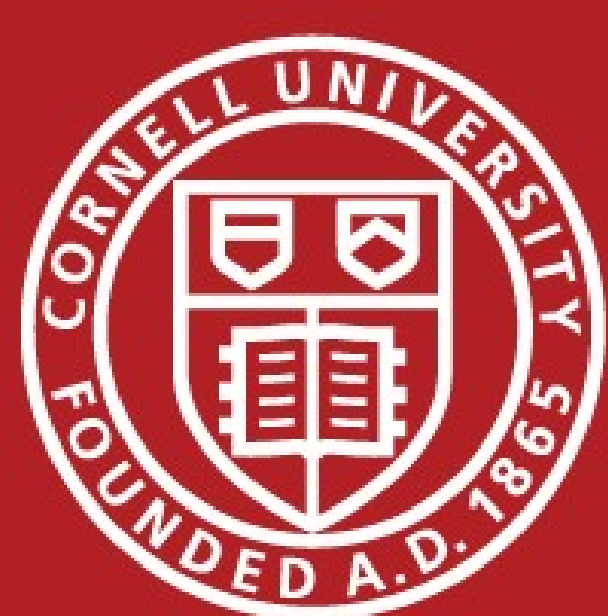


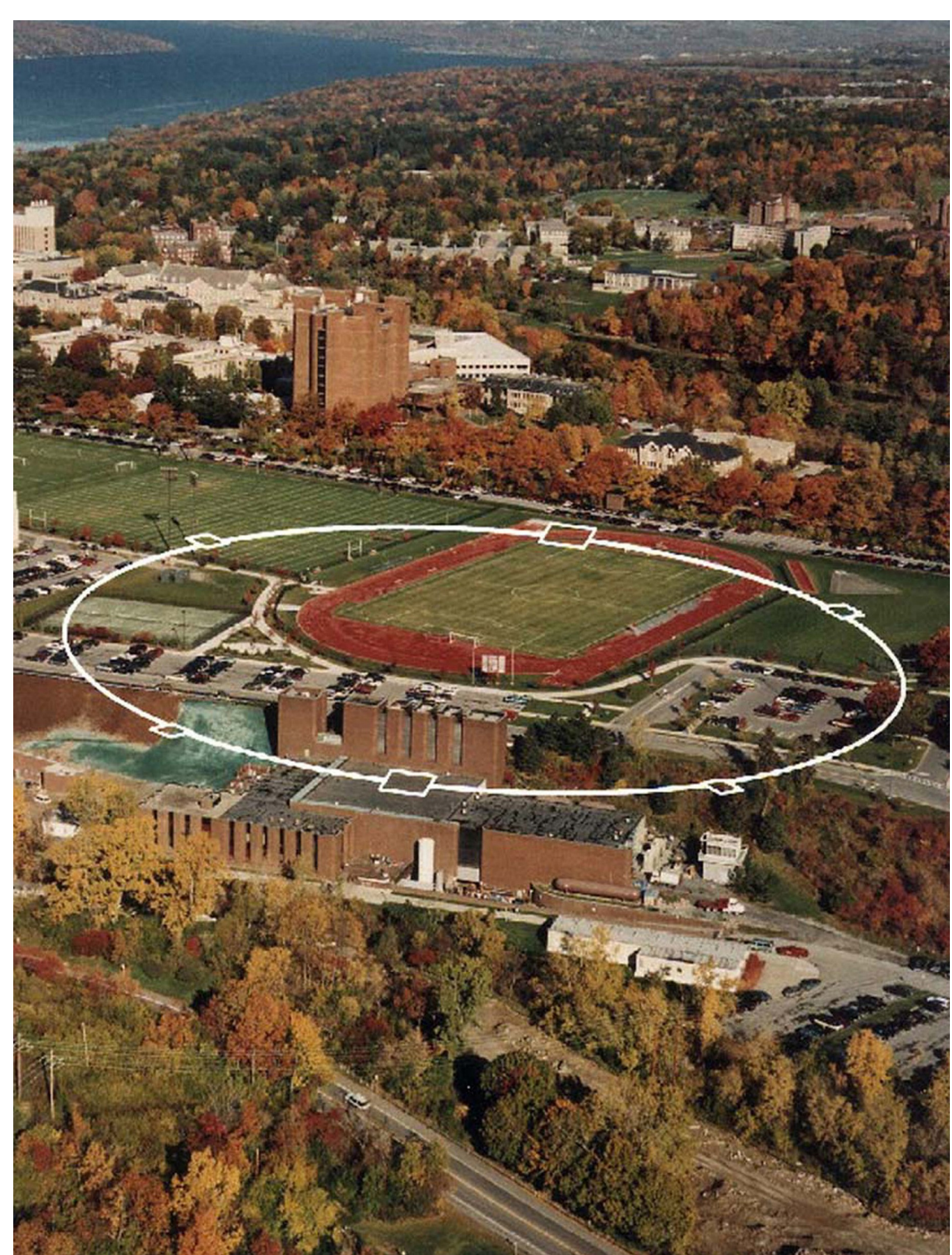


Studies of the Effects of Electron Cloud Formation on Beam Dynamics at CEsrTA

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The Cornell Electron Storage Ring Test Accelerator (CsTA) has commenced operation as a linear collider damping ring test bed following its conversion from an e^+e^- -collider in 2008. A core component of the research program is the measurement of effects of synchrotron-radiation-induced electron cloud formation on beam dynamics. We have studied the interaction of the beam with the cloud in various bunch train configurations, bunch currents, beam energies, and bunch lengths, for both e^+ and e^- beams. This paper compares a subset of these measurements to modeling results from the two-dimensional cloud simulation packages ECLLOUD and POSINST. These codes each model most of the tune shift measurements with remarkable accuracy, while some comparisons merit further investigation.

The CESR Tunnel under the Cornell Campus



The CsTA Reconfiguration
July – October 2008

