



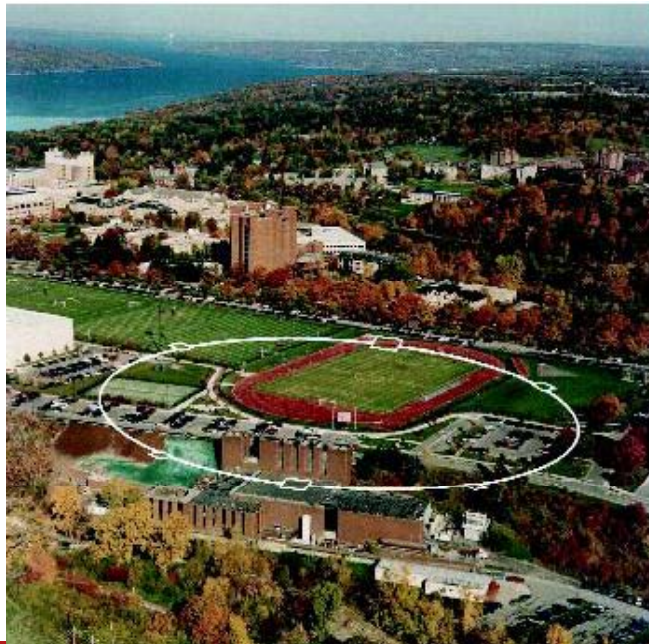
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CesrTA Session Introduction

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- Status Report on CesrTA
- Overview of core research areas
 - Low Emittance Program
 - Electron Cloud R&D
- Discussion of how to organize CesrTA collaboration
- Review of 2008-09 upgrade plan and 2008 run plan
- Meet with Project Managers
 - Input on organization
 - Discussion of goals and milestones



- **CesrTA project funding has been approved**
 - Joint NSF/DOE funding
 - Funding spans FY08-FY10
 - Funding levels consistent with a 2 year experimental program
 - As of late February, funding agreements in place with NSF and DOE
- **Research program and duration have been de-scoped from original proposal**



ILC Damping Rings S3 Task Force – *Very High Priorities*

- Lattice design for baseline positron ring
- Lattice design for baseline electron ring
- Demonstrate < 2 pm vertical emittance
- Characterize single bunch impedance-driven instabilities
- Characterize electron cloud build-up
- Develop electron cloud suppression techniques
- Develop modelling tools for electron cloud instabilities
- Determine electron cloud instability thresholds
- Characterize ion effects
- Specify techniques for suppressing ion effects
- Develop a fast high-power pulser

Close collaborator involvement assumed in all areas
(many expressions of interest obtained)



- Plan as presented to NSF/DOE in July 2007
- Overview
 - 2008-2009
 - Major focus on EC growth and suppression in wiggler, dipole and quadrupole chambers
 - Machine reconfiguration for ultra low emittance operation
 - 2009-2011
 - Work to achieve ultra low emittance operation (5-10 pm ϵ_y target)
 - Development of instrumentation to characterize ultra low emittance beams
 - Beam dynamics studies with electrons and positrons (EC and FII) as progressively lower emittances obtained
 - 2010-2011
 - Tests with ILC prototype chambers
 - Provide evaluations for the ILC EDR available in 2010



- **Plan continues to emphasize**
 - EC Growth and Instability Studies
 - Development of low emittance tuning techniques (target $\varepsilon_y < 20\text{pm}$)
 - Development of x-ray beam size monitor to characterize ultra low emittance beams (1-D camera array)
 - Program to preserve ~ 120 CsrTA operating days per year
- **De-scoped items**
 - Study of ion related instabilities and emittance dilution
 - 2-dimensional x-ray beam size camera upgrade
 - Contingency for:
 - Follow-up tests of alternative mitigation techniques
 - Tests of ILC prototype hardware
 - Further reductions in beam emittance, and further refinement of low emittance tuning methodology



- **Loss of key collaborator support**
 - Wiggler vacuum chamber design/construction
 - Chamber coating support
 - Simulation support
 - Low emittance tuning
 - Experimental support
- **Stress on US science programs in general (including CU LEPP – eg, CLEO-c program terminated 1 month early on March 3)**
- **We are presently in the process of trying to fill gaps due to these losses**



- CsrTA program is presently ramping up
- R&D Targets:
 - Now through mid-2009
 - Complete low emittance machine reconfiguration and upgrades
 - Deploy and commission instrumentation needed for low emittance program
 - Study EC growth studies in wigglers, dipoles, quadrupoles and drift regions in CESR
 - Initial EC mitigation studies
 - Mid-2009 through April 1, 2010
 - Work towards progressively lower emittance operation
 - Complete EC mitigation studies
 - EC beam dynamics studies at the lowest achievable emittances
- Immediate focus:
 - Engineering preparation for machine reconfiguration
 - Preparation/testing of EC vacuum chambers, vacuum diagnostics, and beam instrumentation