2. Beam Dynamics Studies

2.1 Single-Particle Dynamics

2.1.1 Lattice Design

2.1.1.1 Lattice design for baseline positron ring

Required for Baseline Priority: Very High

Activities:

2.1.1.C Damping ring lattice design and optimization
Status as at 11/08/2006: In progress
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.1.E Damping rings optics design
Status as at 28/04/2006: Proposed
* Eun-San Kim, KNU

2.1.1.F Damping rings optics design
Status as at 11/08/2006: In progress
Jie Gao, IHEP
* Yi Peng Sun, IHEP

2.1.1.2 Lattice design for baseline electron ring

Required for Baseline Priority: Very High

Activities:

2.1.1.C Damping ring lattice design and optimization
Status as at 11/08/2006: In progress
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.1.E Damping rings optics design
Status as at 28/04/2006: Proposed
* Eun-San Kim, KNU

2.1.1.F Damping rings optics design
Status as at 11/08/2006: In progress
Jie Gao, IHEP
* Yi Peng Sun, IHEP

2.1.1.3 Lattice design for alternative positron ring

Required for Alternate Priority: Moderate

Activities:

2.1.1.G Alternative ring designs
Status as at 11/08/2006: Proposed
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.1.4 Lattice design for alternative electron ring

Required for Alternate Priority: Moderate

Activities:

2.1.1.G Alternative ring designs
Status as at 11/08/2006: Proposed
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.1.5 Lattice design for injection/extraction lines

Required for Baseline Priority: High

Activities:

2.1.1.A Optics design and optimization for injection/extraction lines
Status as at 10/08/2006: In progress
Gregg Penn, LBNL
* Ina Reichel, LBNL
Marco Venturini, LBNL
Michael Zisman, LBNL

2.1.1.B Characterize dynamics in injection/extraction lines
Status as at 01/01/2006: In progress
Gregg Penn, LBNL
* Ina Reichel, LBNL
Marco Venturini, LBNL
Michael Zisman, LBNL

2.1.1.6 Optics designs for injection/extraction sections in damping rings

Required for Baseline Priority: High

Activities:

2.1.2 Acceptance

2.1.2.1 Characterize damping rings acceptance

Required for Baseline Priority: High

Activities:

2.1.1.C Damping ring lattice design and optimization
Status as at 11/08/2006: In progress
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.2.A Characterize baseline damping rings dynamic aperture
Status as at 10/08/2006: Proposed
Ina Reichel, LBNL
* Michael Zisman, LBNL

2.1.2.B Dynamic aperture studies
Status as at 10/08/2006: Proposed
* Yunhai Cai, SLAC
Yukiyoshi Ohnishi, KEK

2.1.2.C Study of beam dynamics with wigglers
Status as at 10/08/2006: Proposed
Marica Biagini, INFN-LNF
* Susanna Guiducci, INFN-LNF
Miro Preger, INFN-LNF

2.1.2.D Wiggler studies in PETRA-III
Status as at 11/08/2006: Proposed
* Winfried Decking, DESY

2.1.2.2 Optimize the damping rings acceptance

Required for Baseline Priority: High

Activities:

2.1.1.C Damping ring lattice design and optimization
Status as at 11/08/2006: In progress
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.2.C Study of beam dynamics with wigglers
Status as at 10/08/2006: Proposed
Marica Biagini, INFN-LNF
* Susanna Guiducci, INFN-LNF
Miro Preger, INFN-LNF

2.1.2.3 Specify magnet field quality required to ensure good acceptance

Required for Baseline Priority: High

Activities:

2.1.1.C Damping ring lattice design and optimization
Status as at 11/08/2006: In progress
* Louis Emery, ANL
Aimin Xiao, ANL

2.1.2.A Characterize baseline damping rings dynamic aperture
Status as at 10/08/2006: Proposed
Ina Reichel, LBNL
* Michael Zisman, LBNL

2.1.2.B Dynamic aperture studies
Status as at 10/08/2006: Proposed
* Yunhai Cai, SLAC
Yukiyoshi Ohnishi, KEK

2.1.3 Optics Measurement and Correction

2.1.3.1 Develop techniques for optics measurement and correction

Required for Baseline Priority: Moderate

Activities:

2.1.3.A Specify correction systems
Status as at 10/08/2006: In progress
* Yunhai Cai, SLAC

2.1.3.B Orbit and coupling correction and tuning studies
Status as at 11/08/2006: Proposed
* Louis Emery, ANL
Vadim Sajaev, ANL
Aimin Xiao, ANL

4.1.1.B Operation of KEKB LER in a low-emittance mode
Status as at 19/09/2006: Proposed
* Haruyo Koiso, KEK
Akio Morita, KEK

2.1.4 Low-Emittance Tuning

2.1.4.1 Develop strategies for low-emittance tuning

Required for Baseline Priority: High

Activities:

2.1.3.A Specify correction systems
Status as at 10/08/2006: In progress
* Yunhai Cai, SLAC

2.1.3.B Orbit and coupling correction and tuning studies
Status as at 11/08/2006: Proposed
* Louis Emery, ANL
Vadim Sajaev, ANL
Aimin Xiao, ANL

2.1.4.A Low-emittance tuning techniques and requirements
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

2.1.4.B Develop low-emittance tuning strategies
Status as at 01/06/2006: In progress
Richard Helms, Cornell
* Mark Palmer, Cornell

2.1.4.D Low emittance tuning
Status as at 10/08/2006: Proposed
Gregg Penn, LBNL
Ina Reichel, LBNL
Marco Venturini, LBNL
* Michael Zisman, LBNL

4.1.1.A ATF beam dynamics and instrumentation studies
Status as at 11/08/2006: In progress
Eun-San Kim, KNU
Kiyoshi Kubo, KEK
Janice Nelson, SLAC
* Marc Ross, SLAC
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK
Glen White, SLAC
Mark Woodley, SLAC

4.1.1.B Operation of KEKB LER in a low-emittance mode
Status as at 19/09/2006: Proposed
* Haruyo Koiso, KEK
Akio Morita, KEK

2.1.4.2 Specify requirements for survey, alignment and stabilization

Required for Baseline Priority: High

Activities:

2.1.3.A Specify correction systems
Status as at 10/08/2006: In progress
* Yunhai Cai, SLAC

2.1.4.A Low-emittance tuning techniques and requirements
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

2.1.4.C Specify requirements for alignment and stabilization
Status as at 02/05/2006: Proposed
* Mark Palmer, Cornell
Maury Tigner, Cornell

2.1.4.3 Demonstrate < 2 pm vertical emittance

Required for Baseline Priority: Very High

Activities:

2.1.4.A Low-emittance tuning techniques and requirements
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

4.1.1.A ATF beam dynamics and instrumentation studies
Status as at 11/08/2006: In progress
Eun-San Kim, KNU
Kiyoshi Kubo, KEK
Janice Nelson, SLAC
* Marc Ross, SLAC
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK
Glen White, SLAC
Mark Woodley, SLAC

2.1.4.4 Specify support schemes for damping rings magnets

Required for Baseline Priority: High

Activities:

2.1.4.C Specify requirements for alignment and stabilization
Status as at 02/05/2006: Proposed
* Mark Palmer, Cornell
Maury Tigner, Cornell

2.1.4.5 Specify orbit and coupling correction scheme

Required for Baseline Priority: High

Activities:

2.1.3.A Specify correction systems
Status as at 10/08/2006: In progress
* Yunhai Cai, SLAC

2.1.3.B Orbit and coupling correction and tuning studies
Status as at 11/08/2006: Proposed
* Louis Emery, ANL
Vadim Sajaev, ANL
Aimin Xiao, ANL

2.1.4.A Low-emittance tuning techniques and requirements
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

2.1.4.D Low emittance tuning
Status as at 10/08/2006: Proposed
Gregg Penn, LBNL
Ina Reichel, LBNL
Marco Venturini, LBNL
* Michael Zisman, LBNL

2.2 Multi-Particle Dynamics

2.2.1 Single-Bunch Impedance

2.2.1.1 Develop single-bunch impedance models

Required for Baseline Priority: High

Activities:

2.2.1.A Develop an impedance budget and specify feedback systems
Status as at 12/04/2006: In progress
* Karl Bane, SLAC
Sam Heifets, SLAC

2.2.1.B Develop single-bunch impedance models
Status as at 28/04/2006: Proposed
Roger Jones, Manchester/CI
Oleg Malyshev, ASTeC
* Andy Wolski, Liverpool/CI

2.2.1.C Characterize single-bunch collective effects
Status as at 11/08/2006: Proposed
* Jie Gao, IHEP
Yi Peng Sun, IHEP

2.2.1.D Calculate impedance of vacuum chamber components
Status as at 10/08/2006: Proposed
Karl Bane, SLAC
* Sam Heifets, SLAC
Gennady Stupakov, SLAC

2.2.1.E Simulate vacuum chamber and beamline components
Status as at 10/08/2006: Proposed
* Kwok Ko, SLAC

2.2.1.F Single bunch impedance
Status as at 21/08/2006: Proposed
* Yong-Chul Chae, ANL

3.1.1.C Coordinate design of damping ring vacuum system and control the impedance budget
Status as at 10/08/2006: Proposed
* Sam Heifets, SLAC

2.2.1.2 Characterize single-bunch impedance-driven instabilities

Required for Baseline Priority: Very High

Activities:

2.2.1.B Develop single-bunch impedance models
Status as at 28/04/2006: Proposed
Roger Jones, Manchester/CI
Oleg Malyshev, ASTeC
* Andy Wolski, Liverpool/CI

2.2.1.C Characterize single-bunch collective effects
Status as at 11/08/2006: Proposed
* Jie Gao, IHEP
Yi Peng Sun, IHEP

2.2.1.F Single bunch impedance
Status as at 21/08/2006: Proposed
* Yong-Chul Chae, ANL

2.2.5.A Characterize selected single-bunch instabilities
Status as at 11/08/2006: In progress
Marco Venturini, LBNL
* Michael Zisman, LBNL

2.2.5.E Characterize classical single- and multi-bunch instabilities
Status as at 10/08/2006: Proposed
* Sam Heifets, SLAC

2.2.2 Multi-Bunch Impedance

2.2.2.1 Develop long-range wakefield models

Required for Baseline Priority: High

Activities:

2.2.1.A Develop an impedance budget and specify feedback systems
Status as at 12/04/2006: In progress
* Karl Bane, SLAC
Sam Heifets, SLAC

2.2.1.E Simulate vacuum chamber and beamline components
Status as at 10/08/2006: Proposed
* Kwok Ko, SLAC

2.2.2.A Model impedance-driven coupled-bunch instabilities
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

2.2.2.E Multi-bunch instability with Monte Carlo HOM modeling
Status as at 21/08/2006: Proposed
* Louis Emery, ANL

2.2.2.2 Characterize multi-bunch instabilities

Required for Baseline Priority: High

Activities:

2.2.1.A Develop an impedance budget and specify feedback systems
Status as at 12/04/2006: In progress
* Karl Bane, SLAC
Sam Heifets, SLAC

2.2.2.A Model impedance-driven coupled-bunch instabilities
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

2.2.2.D Fast feedback system specifications
Status as at 10/08/2006: Proposed
* John Fox, SLAC

2.2.2.E Multi-bunch instability with Monte Carlo HOM modeling
Status as at 21/08/2006: Proposed
* Louis Emery, ANL

2.2.5.E Characterize classical single- and multi-bunch instabilities
Status as at 10/08/2006: Proposed
* Sam Heifets, SLAC

2.2.2.3 Characterize the effects of injection transients

Required for Baseline Priority: High

Activities:

2.2.2.C Characterize transient beam loading and injected-beam transient effects

Status as at 10/08/2006: Proposed

John Byrd, LBNL

Christine Celata, LBNL

Gregg Penn, LBNL

* Michael Zisman, LBNL

2.2.5.D Characterize injection/extraction transients

Status as at 11/08/2006: Proposed

* Andy Wolski, Liverpool/CI

2.2.3 Electron Cloud

2.2.3.1 Characterize electron-cloud build-up

Required for Baseline Priority: Very High

Activities:

2.2.3.A Model electron cloud instability
Status as at 10/08/2006: Proposed
John Byrd, LBNL
* Christine Celata, LBNL
Gregg Penn, LBNL
Marco Venturini, LBNL

2.2.3.C Model electron-cloud build-up and instabilities
Status as at 28/04/2006: Proposed
Aleksandar Markovik, Rostock
Gisela Poplau, Rostock
Ursula van Rienen, Rostock
* Rainer Wanzenberg, DESY

2.2.3.D Model electron-cloud build-up and instabilities
Status as at 28/04/2006: Proposed
* Jim A. Crittenden, Cornell

2.2.3.H Electron cloud studies in DAFNE
Status as at 10/08/2006: Proposed
* Roberto Cimino, INFN-LNF
Alberto Clozza, INFN-LNF
Cristina Vaccarezza, INFN-LNF

2.2.3.I CESR-TF wiggler and electron cloud studies
Status as at 10/08/2006: Proposed
* John Byrd, LBNL
Stefano de Santis, LBNL
Mauro T.F. Pivi, SLAC
Marco Venturini, LBNL
Lanfa Wang, SLAC
Michael Zisman, LBNL

2.2.3.M Measurement of electron cloud instabilities
Status as at 19/09/2006: Proposed
* John Flanagan, KEK
Kazuhito Ohmi, KEK

2.2.3.N Benchmarking of electron-cloud build-up simulations
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF

Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
* Frank Zimmermann, CERN

2.2.3.O Improvement of electron-cloud simulation codes
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF
Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
* Frank Zimmermann, CERN

2.2.3.Q Experimental determination of surface parameters for electron-cloud build-up
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF
Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
* Frank Zimmermann, CERN

2.2.3.2 Develop electron-cloud suppression techniques

Required for Baseline Priority: Very High

Activities:

2.2.3.F Electron cloud lab measurements and PEP-II studies
Status as at 10/08/2006: In progress
Gerard J. Collet, SLAC
Bob Kirby, SLAC
Nadine Kurita, SLAC
Bob Macek, LANL
* Mauro T.F. Pivi, SLAC
Tor Raubenheimer, SLAC
John Seeman, SLAC
Cristina Vaccarezza, INFN-LNF
Lanfa Wang, SLAC
Andy Wolski, Liverpool/CI

2.2.3.G Studies of clearing electrodes for suppressing electron cloud build-up
Status as at 10/08/2006: Proposed
Karl Bane, SLAC
Stefano de Santis, LBNL
Brett Kuekan, SLAC
Alexander Novokhatski, SLAC
* Mauro T.F. Pivi, SLAC
Pantaleo Raimondi, INFN-LNF
Lanfa Wang, SLAC

2.2.3.K Studies of grooved vacuum chamber surfaces for electron cloud suppression
Status as at 18/08/2006: In progress
Bob Kirby, SLAC
* Mauro T.F. Pivi, SLAC
Tor Raubenheimer, SLAC
Lanfa Wang, SLAC

2.2.3.L Experiments on suppression of electron cloud effect
Status as at 19/09/2006: Proposed
Hitoshi Fukuma, KEK
Ken-ichi Kanazawa, KEK
Kyo Shibata, KEK
* Yusuke Suetsugu, KEK

2.2.3.N Benchmarking of electron-cloud build-up simulations
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF

Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
*Frank Zimmermann, CERN

2.2.3.3 Develop modeling tools for electron-cloud instabilities

Required for Baseline Priority: Very High

Activities:

2.2.3.A Model electron cloud instability
Status as at 10/08/2006: Proposed
John Byrd, LBNL
* Christine Celata, LBNL
Gregg Penn, LBNL
Marco Venturini, LBNL

2.2.3.B Model electron-cloud build-up and instabilities
Status as at 10/08/2006: In progress
* Mauro T.F. Pivi, SLAC
Lanfa Wang, SLAC

2.2.3.C Model electron-cloud build-up and instabilities
Status as at 28/04/2006: Proposed
Aleksandar Markovik, Rostock
Gisela Poplau, Rostock
Ursula van Rienen, Rostock
* Rainer Wanzenberg, DESY

2.2.3.D Model electron-cloud build-up and instabilities
Status as at 28/04/2006: Proposed
* Jim A. Crittenden, Cornell

2.2.3.E Model electron cloud build-up and instabilities
Status as at 28/04/2006: In progress
* Kazuhito Ohmi, KEK

2.2.3.M Measurement of electron cloud instabilities
Status as at 19/09/2006: Proposed
* John Flanagan, KEK
Kazuhito Ohmi, KEK

2.2.3.R Develop a PIC code for computing electron cloud and ion effects
Status as at 20/09/2006: In progress
* Warner Bruns, CERN
Daniel Schulte, CERN
Frank Zimmermann, CERN

2.2.3.4 Determine electron-cloud instability thresholds

Required for Baseline Priority: Very High

Activities:

2.2.3.B Model electron-cloud build-up and instabilities
Status as at 10/08/2006: In progress
* Mauro T.F. Pivi, SLAC
Lanfa Wang, SLAC

2.2.3.C Model electron-cloud build-up and instabilities
Status as at 28/04/2006: Proposed
Aleksandar Markovik, Rostock
Gisela Poplau, Rostock
Ursula van Rienen, Rostock
* Rainer Wanzenberg, DESY

2.2.3.D Model electron-cloud build-up and instabilities
Status as at 28/04/2006: Proposed
* Jim A. Crittenden, Cornell

2.2.3.M Measurement of electron cloud instabilities
Status as at 19/09/2006: Proposed
* John Flanagan, KEK
Kazuhito Ohmi, KEK

2.2.3.P Predict electron-cloud effect in the damping rings
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF
Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
* Frank Zimmermann, CERN

2.2.4 Ion Effects

2.2.4.1 Characterize ion effects

Required for Baseline Priority: Very High

Activities:

2.2.3.R Develop a PIC code for computing electron cloud and ion effects
Status as at 20/09/2006: In progress
* Warner Bruns, CERN
Daniel Schulte, CERN
Frank Zimmermann, CERN

2.2.4.A Experimental studies of fast ion instability at the LBNL-ALS
Status as at 10/08/2006: In progress
* John Byrd, LBNL
Stefano de Santis, LBNL
Marco Venturini, LBNL
Michael Zisman, LBNL

2.2.4.B Numerical and analytical studies of two-stream (beam-ion) instabilities
Status as at 10/08/2006: In progress
* Lanfa Wang, SLAC

2.2.4.C Studies of fast ion instability
Status as at 28/04/2006: In progress
Eun-San Kim, KNU
* Kazuhito Ohmi, KEK

2.2.4.D Studies of fast ion instability
Status as at 11/08/2006: In progress
Eckhard Elsen, DESY
* Guoxing Xia, DESY

2.2.4.E Studies of fast ion instability
Status as at 28/04/2006: Proposed
* Jim A. Crittenden, Cornell

2.2.4.G Experimental studies of fast ion instability
Status as at 10/08/2006: Proposed
* Lanfa Wang, SLAC

2.2.4.H Measure fast ion instability in KEK-ATF
Status as at 11/08/2006: Proposed
Takashi Naito, KEK
Nobuhiro Terenuma, KEK
* Junji Urakawa, KEK

2.2.4.I Characterize ion effects in the damping rings
Status as at 20/09/2006: Completed
Warner Bruns, CERN
Daniel Schulte, CERN
* Frank Zimmermann, CERN

2.2.4.2 Specify techniques for suppressing ion effects

Required for Baseline Priority: Very High

Activities:

2.2.4.B Numerical and analytical studies of two-stream (beam-ion) instabilities
Status as at 10/08/2006: In progress
* Lanfa Wang, SLAC

2.2.4.E Studies of fast ion instability
Status as at 28/04/2006: Proposed
* Jim A. Crittenden, Cornell

2.2.4.F Studies of suppression techniques for fast ion instability
Status as at 10/08/2006: Proposed
* Lanfa Wang, SLAC

2.2.5 Other Collective Effects

2.2.5.1 Characterize space-charge effects

Required for Baseline Priority: Moderate

Activities:

2.2.5.A Characterize selected single-bunch instabilities
Status as at 11/08/2006: In progress
Marco Venturini, LBNL
* Michael Zisman, LBNL

2.2.5.B Self-consistent modeling of space-charge effects
Status as at 11/08/2006: Proposed
Leo P. Michelotti, FNAL
King Ng, FNAL
* Panagiotis Spentzouris, FNAL

2.2.5.2 Estimate the impact from CSR

Required for Baseline Priority: Moderate

Activities:

2.2.5.C Self-consistent modeling of CSR effects
Status as at 12/04/2006: Proposed
* Panagiotis Spentzouris, FNAL

2.2.5.G Estimate the impact from CSR
Status as at 28/04/2006: Proposed
* David Sagan, Cornell

2.2.5.J Study of CSR effects at KEK-ATF
Status as at 10/08/2006: In progress
* John Byrd, LBNL
Stefano de Santis, LBNL
Andy Wolski, Liverpool/CI

2.2.5.K CSR studies at KEK-ATF
Status as at 11/08/2006: In progress
* Alexander S. Aryshev, KEK
Pavel Karataev, RHUL
Takashi Naito, KEK
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK

2.2.5.M CSR modeling
Status as at 21/08/2006: Proposed
* Michael D. Borland, ANL

2.2.5.3 Estimate emittance growth from IBS

Required for Baseline Priority: Moderate

Activities:

2.2.5.A Characterize selected single-bunch instabilities
Status as at 11/08/2006: In progress
Marco Venturini, LBNL
* Michael Zisman, LBNL

2.2.5.I Estimate impact of intrabeam scattering on extracted (non-equilibrium) emittances
Status as at 11/08/2006: Proposed
* Andy Wolski, Liverpool/CI

2.2.5.L Theoretical studies of Intrabeam Scattering
Status as at 11/08/2006: In progress
* Jean-Pierre Delahaye, CERN

2.2.5.4 Determine the Touschek lifetime

Required for Baseline Priority: Moderate

Activities:

2.2.5.H Determine the Touschek lifetime

Status as at 01/06/2006: In progress

Mike Ehrlichman, Minnesota

* Mark Palmer, Cornell

David Sagan, Cornell

2.3 Integrated Dynamics Studies

2.3.1 Integrated Dynamics Studies

2.3.1.1 Perform integrated beam dynamics simulations

Required for Baseline Priority: Moderate

Activities:

2.3.1.A Integrated modeling of damping ring beam dynamics

Status as at 11/08/2006: Proposed

James F. Amundson, FNAL
Michael D. Borland, ANL
Yong-Chul Chae, ANL
*Louis Emery, ANL
Leo P. Michelotti, FNAL
King Ng, FNAL
Vadim Sajaev, ANL
Panagiotis Spentzouris, FNAL
Aimin Xiao, ANL

3. Technical Subsystem or Component Development

3.1 Vacuum

3.1.1 Vacuum Chamber

3.1.1.1 Specify vacuum chamber material and geometry

Required for Baseline Priority: High

Activities:

2.2.3.I CESR-TF wiggler and electron cloud studies
Status as at 10/08/2006: Proposed
* John Byrd, LBNL
Stefano de Santis, LBNL
Mauro T.F. Pivi, SLAC
Marco Venturini, LBNL
Lanfa Wang, SLAC
Michael Zisman, LBNL

3.1.1.A Damping rings wiggler and straights vacuum system design
Status as at 10/08/2006: In progress
* Steve Marks, LBNL
Dave Plate, LBNL
Ross Schlueter, LBNL

3.1.1.B Damping rings vacuum studies
Status as at 11/08/2006: Proposed
* Oleg Malyshev, ASTeC

3.1.1.D Vacuum chamber studies
Status as at 11/08/2006: Proposed
* Dong Hai Yi, IHEP

3.1.1.E Vacuum design of damping rings
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF
Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
* Frank Zimmermann, CERN

3.1.1.2 Develop technical designs for principal vacuum chamber components

Required for Baseline Priority: High

Activities:

2.2.3.I CESR-TF wiggler and electron cloud studies
Status as at 10/08/2006: Proposed
* John Byrd, LBNL
Stefano de Santis, LBNL
Mauro T.F. Pivi, SLAC
Marco Venturini, LBNL
Lanfa Wang, SLAC
Michael Zisman, LBNL

3.1.1.A Damping rings wiggler and straights vacuum system design
Status as at 10/08/2006: In progress
* Steve Marks, LBNL
Dave Plate, LBNL
Ross Schlueter, LBNL

3.1.1.C Coordinate design of damping ring vacuum system and control the impedance budget
Status as at 10/08/2006: Proposed
* Sam Heifets, SLAC

3.1.1.3 Characterize vacuum system performance

Required for Baseline Priority: High

Activities:

3.1.1.A Damping rings wiggler and straights vacuum system design
Status as at 10/08/2006: In progress
* Steve Marks, LBNL
Dave Plate, LBNL
Ross Schlueter, LBNL

3.1.1.B Damping rings vacuum studies
Status as at 11/08/2006: Proposed
* Oleg Malyshev, ASTeC

3.1.1.E Vacuum design of damping rings
Status as at 20/09/2006: In progress
Roberto Cimino, INFN-LNF
Oleg Malyshev, ASTeC
Ron Reid, ASTeC
Cristina Vaccarezza, INFN-LNF
Rainer Wanzenberg, DESY
* Frank Zimmermann, CERN

3.1.2 Vacuum Pumps

3.1.2.1 Specify vacuum pumps

Required for Baseline Priority: Low

Activities:

3.1.3 Vacuum Diagnostics and Controls

3.1.3.1 Specify vacuum diagnostics and controls

Required for Baseline Priority: Low

Activities:

3.1.4 Vacuum Valves

3.1.4.1 Specify vacuum valves

Required for Baseline Priority: Moderate

Activities:

3.3 Normal-Conducting Magnets

3.3.2 Dipoles

3.3.2.1 Develop physics designs for main dipoles

Required for Baseline Priority: Moderate

Activities:

3.3.2.A Damping rings magnet design

Status as at 11/08/2006: Proposed

* Shi Cai Tu, IHEP

3.3.2.2 Develop engineering designs for main dipoles

Required for Baseline Priority: Low

Activities:

3.3.2.A Damping rings magnet design

Status as at 11/08/2006: Proposed

* Shi Cai Tu, IHEP

3.3.3 Quadrupoles

3.3.3.1 Develop physics designs for quadrupoles

Required for Baseline Priority: Moderate

Activities:

3.3.2.A Damping rings magnet design

Status as at 11/08/2006: Proposed

* Shi Cai Tu, IHEP

3.13.1.A Mechanical systems design and integration

Status as at 10/08/2006: Proposed

* Steve Marks, LBNL

Dave Plate, LBNL

Ross Schlueter, LBNL

3.3.3.2 Develop engineering designs for quadrupoles

Required for Baseline Priority: Low

Activities:

3.3.2.A Damping rings magnet design

Status as at 11/08/2006: Proposed

* Shi Cai Tu, IHEP

3.3.4 Sextupoles

3.3.4.1 Develop physics designs for sextupoles

Required for Baseline Priority: Moderate

Activities:

3.3.2.A Damping rings magnet design
Status as at 11/08/2006: Proposed
* Shi Cai Tu, IHEP

3.13.1.A Mechanical systems design and integration
Status as at 10/08/2006: Proposed
* Steve Marks, LBNL
Dave Plate, LBNL
Ross Schlueter, LBNL

3.3.4.2 Develop engineering designs for sextupoles

Required for Baseline Priority: Low

Activities:

3.3.2.A Damping rings magnet design
Status as at 11/08/2006: Proposed
* Shi Cai Tu, IHEP

3.3.5 Higher-Order Multipoles

3.3.5.1 Develop physics designs for higher-order multipoles

Required for Baseline Priority: Moderate

Activities:

3.3.5.2 Develop engineering designs for higher-order multipoles

Required for Baseline Priority: Low

Activities:

3.3.6 Steering Magnets

3.3.6.1 Specify steering magnets

Required for Baseline Priority: Moderate

Activities:

3.3.7 Skew Quadrupoles

3.3.7.1 Specify skew quadrupoles

Required for Baseline Priority: Moderate

Activities:

3.4 Superconducting Magnets

3.4.6 Damping Wiggler

3.4.6.1 Develop physics designs for damping wigglers

Required for Baseline Priority: Moderate

Activities:

2.1.2.C Study of beam dynamics with wigglers
Status as at 10/08/2006: Proposed
Marica Biagini, INFN-LNF
* Susanna Guiducci, INFN-LNF
Miro Preger, INFN-LNF

3.2.6.A Optimize design of permanent magnet wiggler
Status as at 10/08/2006: In progress
* Albert Babayan, YerPhI

3.4.6.A Develop physics design for damping wigglers
Status as at 11/08/2006: In progress
* Jeremy Urban, Cornell

3.4.6.B Development of superconducting wiggler
Status as at 11/08/2006: In progress
* Jean-Pierre Delahaye, CERN

4.1.1.C Effects of wiggler
Status as at 19/09/2006: Proposed
* Kazumi Egawa, KEK
Mika Masuzawa, KEK

3.4.6.2 Develop engineering designs for damping wigglers

Required for Baseline Priority: High

Activities:

3.4.6.B Development of superconducting wiggler
Status as at 11/08/2006: In progress
* Jean-Pierre Delahaye, CERN

3.5 Kickers

3.5.1 Damping Ring Injection/Extraction Kickers

3.5.1.1 Develop a fast high-power pulser for injection/extraction kickers

Required for Baseline Priority: Very High

Activities:

3.5.1.A Development of high-availability injection/extraction kicker (SLAC/LLNL)
Status as at 10/08/2006: In progress
Craig Brooksby, LLNL
Ed Cook, LLNL
* Ray Larsen, SLAC
Marc Ross, SLAC

3.5.1.B Development of high-availability injection/extraction kicker (SLAC/KEK)
Status as at 18/08/2006: In progress
Ray Larsen, SLAC
Takashi Naito, KEK
* Marc Ross, SLAC
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK

3.5.1.C Development of fast injection/extraction kickers
Status as at 11/08/2006: In progress
Gerry Dugan, Cornell
Bob Meller, Cornell
* Mark Palmer, Cornell

3.5.1.D Development of fast injection/extraction kickers
Status as at 10/08/2006: In progress
* George Gollin, UIUC

3.5.1.F Laboratory test of FID fast high-power pulser
Status as at 10/08/2006: In progress
David Alesini, INFN-LNF
* Fabio Marcellini, INFN-LNF

3.5.1.G Development of DSRD-based fast high-power pulser
Status as at 18/08/2006: In progress
* Anatoly Krasnykh, SLAC

3.5.1.2 Develop physics designs for kicker striplines

Required for Baseline Priority: High

Activities:

3.5.1.D Development of fast injection/extraction kickers
Status as at 10/08/2006: In progress
* George Gollin, UIUC

3.5.1.E Development of stripline electrodes for fast kickers
Status as at 10/08/2006: Proposed
* David Alesini, INFN-LNF
Fabio Marcellini, INFN-LNF

3.5.1.H Development of reduced beam impedance kicker structure
Status as at 22/08/2006: In progress
* Anatoly Krasnykh, SLAC

4.2.1.A ATF kicker development
Status as at 10/08/2006: In progress
* Stefano de Santis, LBNL
Anatoly Krasnykh, SLAC

4.2.1.B Development of fast rise/fall time kicker for ATF/ATF2
Status as at 11/08/2006: In progress
Hitoshi Hayano, KEK
* Takashi Naito, KEK
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK

3.5.1.3 Develop engineering designs for kicker striplines

Required for Baseline Priority: Moderate

Activities:

3.5.1.D Development of fast injection/extraction kickers
Status as at 10/08/2006: In progress
* George Gollin, UIUC

3.5.1.E Development of stripline electrodes for fast kickers
Status as at 10/08/2006: Proposed
* David Alesini, INFN-LNF
Fabio Marcellini, INFN-LNF

4.2.1.B Development of fast rise/fall time kicker for ATF/ATF2
Status as at 11/08/2006: In progress
Hitoshi Hayano, KEK
* Takashi Naito, KEK
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK

3.6 Damping Ring RF Systems

3.6.1 RF System

3.6.1.1 Specify 650 MHz RF system

Required for Baseline Priority: High

Activities:

3.6.1.2 Prototype complete 650 MHz RF unit and test at high power

Required for Baseline Priority: High

Activities:

3.6.2.A Development of 650 MHz superconducting RF system

Status as at 11/08/2006: Proposed

* Mark Palmer, Cornell

3.6.2 RF Cavities

3.6.2.1 Develop conceptual design for 650 MHz RF cavities, cryomodules and supporting hard

Required for Baseline Priority: High

Activities:

3.6.1.A RF system specification

Status as at 10/08/2006: In progress

* Roberto Boni, INFN-LNF

3.6.1.B RF system issues

Status as at 19/09/2006: Proposed

* Kazunori Akai, KEK

3.6.2.A Development of 650 MHz superconducting RF system

Status as at 11/08/2006: Proposed

* Mark Palmer, Cornell

3.6.2.2 Develop engineering design for 650 MHz RF cavities, cryomodules and supporting hard

Required for Baseline Priority: High

Activities:

3.6.1.B RF system issues

Status as at 19/09/2006: Proposed

* Kazunori Akai, KEK

3.6.2.A Development of 650 MHz superconducting RF system

Status as at 11/08/2006: Proposed

* Mark Palmer, Cornell

3.6.4 RF Controls (Low-Level RF)

3.6.4.1 Develop RF controls

Required for Baseline Priority: High

Activities:

3.6.1.B RF system issues
Status as at 19/09/2006: Proposed
* Kazunori Akai, KEK

3.6.2.A Development of 650 MHz superconducting RF system
Status as at 11/08/2006: Proposed
* Mark Palmer, Cornell

3.6.4.A Develop low-level RF systems
Status as at 12/04/2006: Proposed
* John Byrd, LBNL
Larry Doolittle, LBNL
Russell Wilcox, LBNL

3.6.4.B Design studies for damping rings low level RF system
Status as at 10/08/2006: Proposed
* John Fox, SLAC

3.7 Instrumentation and Diagnostics

3.7.1 Beam Intensity Diagnostics

3.7.1.1 Develop beam lifetime instrumentation

Required for Baseline Priority: Moderate

Activities:

3.7.1.2 Develop fast loss monitors

Required for Baseline Priority: Moderate

Activities:

3.7.2 Beam Position and Phase Diagnostics

3.7.2.1 Develop beam position monitors

Required for Baseline Priority: Moderate

Activities:

3.7.2.A KEK-ATF BPM Electronics

Status as at 11/08/2006: In progress

Maria Carballo, SLAC
Joe Frisch, SLAC
Masao Kuriki, KEK
Justin May, SLAC
Takashi Naito, KEK
* Marc Ross, SLAC
Steve Smith, SLAC
Tonee Smith, SLAC
Nobuhiro Terenuma, KEK

3.7.2.B Single-pass, high-resolution RF BPM

Status as at 11/08/2006: Proposed

* Robert Lill, ANL

3.7.2.C Damping rings instrumentation

Status as at 11/08/2006: Proposed

* Cao Jian She, IHEP

3.7.3.C Instrumentation development

Status as at 11/08/2006: Proposed

* Jean-Pierre Delahaye, CERN

4.1.1.A ATF beam dynamics and instrumentation studies

Status as at 11/08/2006: In progress

Eun-San Kim, KNU
Kiyoshi Kubo, KEK
Janice Nelson, SLAC
* Marc Ross, SLAC
Nobuhiro Terenuma, KEK
Junji Urakawa, KEK
Glen White, SLAC
Mark Woodley, SLAC

3.7.2.2 Develop feedforward for extraction kicker stabilization

Required for Baseline Priority: High

Activities:

3.7.3 Beam Size and Bunch Length Diagnostics

3.7.3.1 Develop high-precision beam size monitor

Required for Baseline Priority: Moderate

Activities:

3.7.3.C Instrumentation development

Status as at 11/08/2006: Proposed

* Jean-Pierre Delahaye, CERN

4.1.1.A ATF beam dynamics and instrumentation studies

Status as at 11/08/2006: In progress

Eun-San Kim, KNU

Kiyoshi Kubo, KEK

Janice Nelson, SLAC

* Marc Ross, SLAC

Nobuhiro Terenuma, KEK

Junji Urakawa, KEK

Glen White, SLAC

Mark Woodley, SLAC

3.7.3.2 Develop precision bunch-by-bunch beam size monitor

Required for Baseline Priority: Moderate

Activities:

3.7.3.A Development of time-resolved photon diagnostics
Status as at 11/08/2006: In progress
Alex Lumpkin, ANL
* Bingxin Yang, ANL

3.7.3.B Develop instrumentation for monitoring emittance damping
Status as at 01/06/2006: In progress
* Jim Alexander, Cornell
John A. Dobbins, Cornell
Robert Holtzapple, Alfred U
Mark Palmer, Cornell
Charles R. Strohman, Cornell
Eugene Tanke, Cornell

3.7.3.C Instrumentation development
Status as at 11/08/2006: Proposed
* Jean-Pierre Delahaye, CERN

3.7.3.3 Develop instrumentation for measuring injected phase space

Required for Baseline Priority: Moderate

Activities:

3.7.3.4 Develop instrumentation for monitoring emittance damping

Required for Baseline Priority: High

Activities:

3.7.3.A Development of time-resolved photon diagnostics
Status as at 11/08/2006: In progress
Alex Lumpkin, ANL
* Bingxin Yang, ANL

3.7.3.B Develop instrumentation for monitoring emittance damping
Status as at 01/06/2006: In progress
* Jim Alexander, Cornell
John A. Dobbins, Cornell
Robert Holtzapple, Alfred U
Mark Palmer, Cornell
Charles R. Strohman, Cornell
Eugene Tanke, Cornell

3.7.3.5 Develop fast coupling monitor

Required for Baseline Priority: Moderate

Activities:

3.7.4 Higher-Order Beam Diagnostics

3.7.4.1 Develop coherent signal receivers

Required for Baseline Priority: Moderate

Activities:

3.7.5.B Development of betatron tune monitor and coherent signal receiver

Status as at 10/08/2006: Proposed

Walter Barry, LBNL

* John Byrd, LBNL

Larry Doolittle, LBNL

Alessandro Ratti, LBNL

3.7.5 Other Instrumentation and Diagnostics

3.7.5.1 Develop tune monitors

Required for Baseline Priority: Moderate

Activities:

3.7.5.B Development of betatron tune monitor and coherent signal receiver

Status as at 10/08/2006: Proposed

Walter Barry, LBNL

* John Byrd, LBNL

Larry Doolittle, LBNL

Alessandro Ratti, LBNL

3.7.5.2 Develop instrumentation for fast dispersion measurements

Required for Baseline Priority: Moderate

Activities:

3.7.5.A Develop instrumentation for fast dispersion measurements

Status as at 01/06/2006: In progress

* Mike Billing, Cornell

Richard Helms, Cornell

3.7.6 Integrated Instrumentation and Diagnostics Systems

3.7.6.1 Specify overall requirements for instrumentation and diagnostics

Required for Baseline Priority: High

Activities:

3.8 Feedback Systems

3.8.1 Damping Ring Bunch-by-Bunch Feedback Systems

3.8.1.1 Specify bunch-by-bunch feedback systems

Required for Baseline Priority: Moderate

Activities:

2.2.1.A Develop an impedance budget and specify feedback systems
Status as at 12/04/2006: In progress
* Karl Bane, SLAC
Sam Heifets, SLAC

2.2.2.D Fast feedback system specifications
Status as at 10/08/2006: Proposed
* John Fox, SLAC

3.8.1.B Characterize injection noise
Status as at 10/08/2006: Proposed
Walter Barry, LBNL
* John Byrd, LBNL
Larry Doolittle, LBNL
Alessandro Ratti, LBNL

3.8.1.E Bunch-by-bunch feedback systems and related diagnostics systems
Status as at 19/09/2006: Proposed
Masaki Tejima, KEK
* Makoto Tobiyama, KEK

3.8.1.2 Model bunch-by-bunch feedback systems

Required for Baseline Priority: Moderate

Activities:

3.8.1.A Develop transverse feedback system
Status as at 10/08/2006: Proposed
Walter Barry, LBNL
* John Byrd, LBNL
Larry Doolittle, LBNL
Alessandro Ratti, LBNL

3.8.1.B Characterize injection noise
Status as at 10/08/2006: Proposed
Walter Barry, LBNL
* John Byrd, LBNL
Larry Doolittle, LBNL
Alessandro Ratti, LBNL

3.8.1.E Bunch-by-bunch feedback systems and related diagnostics systems
Status as at 19/09/2006: Proposed
Masaki Tejima, KEK
* Makoto Tobiyama, KEK

3.8.1.3 Develop bunch-by-bunch feedback systems

Required for Baseline Priority: Moderate

Activities:

3.8.1.C Fast feedback system development
Status as at 10/08/2006: Proposed
* John Fox, SLAC

3.8.1.D Development of fast feedback systems
Status as at 10/08/2006: Proposed
* Alessandro Drago, INFN-LNF

3.8.1.E Bunch-by-bunch feedback systems and related diagnostics systems
Status as at 19/09/2006: Proposed
Masaki Tejima, KEK
* Makoto Tobiyama, KEK

3.10 Supports and Alignment Systems

3.10.1 Normal-Conducting Magnet Supports

3.10.1.1 Specify alignment techniques appropriate for different sections of the rings

Required for Baseline Priority: Moderate

Activities:

2.1.4.C Specify requirements for alignment and stabilization

Status as at 02/05/2006: Proposed

* Mark Palmer, Cornell

Maury Tigner, Cornell

3.7.3.C Instrumentation development

Status as at 11/08/2006: Proposed

* Jean-Pierre Delahaye, CERN

3.10.1.2 Specify support and stabilization hardware

Required for Baseline Priority: High

Activities:

3.13 Multiple Systems

3.13.1 Systems Integration

3.13.1.1 Develop integrated mechanical design

Required for Baseline Priority: High

Activities:

3.13.1.A Mechanical systems design and integration

Status as at 10/08/2006: Proposed

* Steve Marks, LBNL

Dave Plate, LBNL

Ross Schlueter, LBNL