

Natalia V. Connolly (née Kuznetsova)
Curriculum Vitae

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PERSONAL

- Date of Birth: May 6, 1973
- Place of Birth: Minsk, Belarus
- Citizenship: Belarus (U.S. Permanent Resident)

EDUCATION

- Ph.D. Physics. University of California, Santa Barbara. August 2001.
- B.A. Physics *summa cum laude* with High Honors in Physics. Kenyon College, Gambier, OH. May 1995.

HONORS

- Lederman Fellowship, Fermi National Accelerator Laboratory, 2001-2003.
- Ferrando-Fithian Fellowship, UCSB Physics Department, 1995-1996.
- Membership in *Phi Beta Kappa*, 1995.

POSITIONS HELD

- Hamilton College Assistant Professor of Physics, 2007-present.
- Lawrence Berkeley National Laboratory Postdoctoral Research Fellow, 2003-2007.
- Fermi National Accelerator Laboratory Lederman Fellow, 2001-2003.
- University of California, Santa Barbara Graduate Research Assistant, 1997-2001.
- University of California, Santa Barbara Graduate Teaching Assistant, 1995-1997.

TEACHING EXPERIENCE

Assistant Professor of Physics Hamilton College 2007-present

- Teaching a calculus-based introductory physics course and laboratory for scientists and engineers.

Postdoctoral Research Fellow Lawrence Berkeley National Laboratory 2003-2007

- *Outreach*: Giving popular lectures on general relativity and cosmology at schools and colleges, both in California and in other states.
- *QuarkNet*: Invited public lectures on cosmology for high school teachers involved in QuarkNet, an educational program sponsored by the National Science Foundation and the U.S. Department of Energy, created with the goal of involving high school science teachers in cutting-edge physics research.
- *EYH*: Active in the Expanding Your Horizons (EYH) program, (*e.g.*, developing “Daytime Astronomy” activities for middle-school students), whose mission is the promotion of mathematics and science among all people, with a particular emphasis on the needs of women and girls.

Lederman Fellow Fermi National Accelerator Laboratory 2001-2003

- *Outreach*: As a Lederman Fellow, was heavily involved in educational/outreach activities at FNAL, such as meeting with members of the community and visiting local schools with the purpose of explaining the goals of high energy physics research and the mission of Fermilab.
- *Saturday Morning Physics*: Gave lectures on general physics topics (such as special and general relativity) for area high school students as part of Fermilab’s Saturday Morning Physics program.

Teaching Assistant University of California, Santa Barbara 1995-1997

- *Basic Physics*: Taught year-long sequence of laboratory classes on topics including electricity and magnetism, thermodynamics, optics and modern physics. Led lab sessions, graded homework and exams, and held office hours.
- *Elementary Particle Physics* (undergraduate level, 1 quarter): Provided homework solutions, graded homework and exams, and held office hours.

RESEARCH EXPERIENCE

Postdoctoral Research Fellow Lawrence Berkeley National Laboratory. 2003-2007

Simulation development for the Super/Nova Acceleration Probe (SNAP) experiment

- Using the SNAP simulation, performed critical mission optimization and performance studies (*e.g.*, mission cadence vs. exposure time trade-offs, studies of light curve fitting, using a ground-based mission vs. a space-based one).
- Collaborated with SNAP engineers in a simulation study of the optimal mirror design for a study of the optimal quality of the SNAP telescope mirror.
- Developed tools for simulating grism-based instruments and carrying out studies to understand the suitability of grism usage for precision cosmology.
- Wrote numerous packages crucial for the SNAP simulation, such as those responsible for simulating the effects of the telescope and detector optics as well as the Earth's atmosphere, creating point source shapes, and many others. Created both aperture photometry and PSF photometry exposure time calculators for SNAP.
- A key developer in the design of the Java-based SNAP simulation physics framework and computing architecture. The software is implemented in JDK 5.0 and incorporates PostgreSQL, Tomcat, JDBC, Servlets, XML, JUnit, and other technologies.

Hubble Space Telescope (HST) data analysis for the Supernova Cosmology Project (SCP)

- Developed an original analysis of type Ia supernova rates using the HST GOODS dataset and the supernovae found by the SCP high-redshift supernova searches. As part of the analysis, created a principally new method of classifying supernova candidates that do not have a spectroscopic confirmation of their type, an important problem for the next generation of large ground-based supernova surveys.

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- Co-I on HST Observing Program “Decelerating and Dustfree: Efficient Dark Energy Studies with Supernovae and Clusters”. This program was awarded 219 HST orbits to study supernovae in galaxy clusters, with follow-up data from ground-based telescopes.
- Participating in high-redshift supernova searches with the HST.
- Maintained and developed C++-based code for astronomical image reduction. Created an SQL database for keeping track of the data reduction process; created several PHP- and Perl- based applications for an effective Web interface to the database.
- Performed optical, near-infrared, and spectral HST data reduction using the data from the following HST instruments: the ACS imager, the ACS grism, and the NICMOS imager.

Lederman Fellow

Fermi National Accelerator Laboratory.

2001-2003

Top physics analysis at the Collider Detector at Fermilab (CDF) experiment

- Developed tools for analyzing the polarization of the W in top decays, an analysis with a potential to discover new physics.
- Performed the first Tevatron Run II measurement of the cross section for top quark pair production in the b -tagged sample.
- Developed and tested tools for identifying the b quarks, crucial for top quark and (as of yet undiscovered) Higgs boson physics analyses. Provided data samples and wrote software for determining the fraction of mis-tagged b quarks.

Work on Run IIb silicon detector simulation

- Contributed to the creation of a simulation model crucial for the Run IIb silicon detector upgrade studies.

Data acquisition operations

- Was responsible for operating the data acquisition system at CDF as a shift crew member from August - November 2002.

Level 2 trigger hardware development

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- Worked on electronics for extensive testing and possible upgrades of the Level 2 trigger system at CDF, with the purpose of establishing the reliability of the system at high luminosity. Designed and successfully tested two prototype electronics boards. Wrote VHDL firmware for and performed real-time simulation of ALTERA APEX 1K and 20K series programmable logic devices.

Research Assistant University of California, Santa Barbara. 1997-2001
Advisors: Prof. Michael Witherell and Prof. Jeffrey Richman.

Search for rare decays $B^+ \rightarrow K^+ \ell^+ \ell^-$ and $B^0 \rightarrow K^{*0} \ell^+ \ell^-$ at the BABAR experiment at Stanford Linear Accelerator Center

- Developed technique for the search for rare decays $B^+ \rightarrow K^+ \ell^+ \ell^-$ and $B^0 \rightarrow K^{*0} \ell^+ \ell^-$, the processes with a potential for observing physics beyond the Standard Model.
- Established first preliminary upper limits for the branching fractions of these processes using the 2000 BABAR data.

Study of semileptonic B meson decays in BABAR

- At an early stage of the BABAR experiment, established the semileptonic signal, $B \rightarrow D^* e \nu$, using the first BABAR data in order to verify the quality of the data and the reconstruction software.

Implementation of new tracking algorithms in BABAR

- Designed and implemented a new method of tracking across the interface between the silicon vertex tracker and the drift chamber. This algorithm led to a significant improvement of the tracking performance.
- Demonstrated the advantages of the new approach to the collaboration through a series of extensive tests, which led to the approval of the algorithm as the default tracking option.

Work on graphics in BABAR

- Contributed to the development of the new Java-based, WWW-interactive, BABAR event display (WIRED). Work included the implementation of the data types relevant for the silicon vertex detector and tracking.
- Created the online event display for the silicon vertex detector.

Implementation of Geant4-based silicon vertex detector simulation in *BABAR*

- Designed and implemented a principally new simulation of the silicon vertex detector geometry based on Geant4, a toolkit for the simulation of the passage of particles through matter, making extensive use of C++ and object-oriented technology.
- Validated the performance of the new fast simulation against a full Geant3 simulation.

Development and commissioning of the silicon vertex detector for *BABAR*

- Silicon vertex detector contact person for issues concerning the performance of the detector in the presence of high machine backgrounds.
- Member of the core silicon vertex detector commissioning team. Provided tools for and performed initial performance studies of cosmic ray data.
- Created production database (Microsoft ACCESS) for tracking the progress of the silicon detector wafer production at UCSB. Participated in the creation of the silicon vertex detector construction database.
- After performing an extensive study of the tracking efficiencies in the detector, proposed a more efficient bonding scheme for the inner-layer modules, which was accepted in August of 1998.
- Wrote software (LabVIEW, scripting languages) and built hardware for the silicon detector wafer testing in a controlled environment.

PRESENTATIONS

- “A Probabilistic Approach to Classifying Supernovae Using Photometric Information”, AAS 209th Meeting. Seattle, WA, January 5-10 2006.
- “Observational Cadence vs. Exposure Time Trade-off for Supernova Surveys”, AAS 209th Meeting. Seattle, WA, January 5-10 2006.
- “The Super/Nova Acceleration Probe (SNAP)”, Cosmo 2006 (International Workshop on Particle Physics and the Early Universe). Tahoe City, CA, September 25-29, 2006.
- “The Super/Nova Acceleration Probe (SNAP)”, Sources and Detection of Dark Matter and Dark Energy in the Universe (7th UCLA Symposium). Los Angeles, February 22-24 2006.
- “A Study of SNAP Simulation Lightcurve Fitter Parameters”, AAS 207th Meeting. Washington, D.C., January 8-12 2006.
- “Supernova/Acceleration Probe: A Dark Energy Mission Overview”, TRIUMF Seminar, May 18, 2005.
- “Supernova/Acceleration Probe: A Dark Energy Mission Overview”, Cosmology Seminar, Department of Physics, University of California, Davis, April 28, 2005.
- “SNAPsim: A Supernova Cosmology Mission Simulation”, AAS 205th Meeting. San Diego, CA, January 9-13 2005.
- “SNAP: A Dark Energy Mission”, Joint Particle Physics Seminar, Department of Physics and Astronomy, University of California, Irvine, November 10, 2004.
- “Supernova / Acceleration Probe: A Dark Energy Mission”, Wide Field Imaging From Space Conference. Berkeley, CA, May 16-18 2004.
- “Supernova / Acceleration Probe: A Dark Energy Mission”, AAS 203rd Meeting. Atlanta, GA, January 4-8 2004.
- “How *BABAR* grew up”, California Institute of Technology Physics & Astronomy Department Colloquium. Pasadena, CA, April 25 2002.
- “Research and Education: Planning an Effective Outreach Program in Balance with a Research Career”, AAS 2002. Albuquerque, NM, April 20-23, 2002.
- “Fermilab in Run II”, University of Louisville Physics Department Colloquium. Louisville, KY, March 8 2002.

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- “Search for $B^+ \rightarrow K^+ \ell^+ \ell^-$ and $B^0 \rightarrow K^{*0} \ell^+ \ell^-$ with the *BABAR* detector”, DPF 2000. Columbus, OH, August 9-12 2000.

SUMMARY OF SKILLS

- Good knowledge of Unix/Linux operating systems.
- Extensive experience programming in C++, C, Java, Fortran, and Visual Basic.
- Good working knowledge of standard astronomical tools such as IRAF, PyRAF. Extensive experience with STSDAS/DITHER. Experienced with HST/ACS spectral data reduction using aXe.
- Proficient in IDL.
- Working knowledge of PHP and HTML.
- Experienced in VHDL and EDA tools: Quartus II, Max+Plus II, Mentor Graphics Design Architect. Proficient in LabVIEW.
- Experienced in scripting languages: Perl, TCL, and csh.
- Proficient in LaTeX, PAW, ROOT, HBOOK.

PRIMARY PUBLICATIONS

N. Kuznetsova *et al.* (SCP Collaboration), “A New Determination of the High Redshift Type Ia Supernova Rates with the Hubble Space Telescope Advanced Camera for Surveys”, submitted to ApJ (2007).

N. Kuznetsova and B. Connolly, “A Probabilistic Approach to Classifying Supernovae Using Photometric Information”, ApJ, 659, 530 (2007).

J. Melbourne *et al.* “Rest-Frame R-band Lightcurve of a $z \sim 1.3$ Supernova Obtained with Keck Laser Adaptive Optics”, accepted for publication in AJ (2007).

G. Aldering *et al.* (SNAP Collaboration), ”Supernova / Acceleration Probe: A Satellite Experiment to Study the Nature of the Dark Energy”, submitted to PASP; preprint astro-ph/0405232 (2004).

D. Acosta *et al.* (CDF Collaboration), “Measurement of the $t\bar{t}$ Production Cross Section in $p\bar{p}$ Collisions at $\sqrt{s}=1.96$ TeV using Lepton + Jets Events with Secondary Vertex b -tagging”, Phys. Rev. **D71**, 052003 (2005).

B. Aubert *et al.* (BABAR Collaboration), “Search for the Rare Decays $B^+ \rightarrow K^+\ell^+\ell^-$ and $B^0 \rightarrow K^{*0}\ell^+\ell^-$ ”, Phys.Rev.Lett. **88**, 241801 (2002).

N. Kuznetsova (for the BABAR Collaboration), “Search for $B^+ \rightarrow K^+\ell^+\ell^-$ and $B^0 \rightarrow K^{*0}\ell^+\ell^-$ ”, Int. J. Mod. Phys. **A16S1A**, 458 (2001).

SELECTED SECONDARY PUBLICATIONS

G. Garavini *et al.* (The Supernova Cosmology Project), “Quantitative comparison between Type Ia supernova spectra at low and high redshifts: A case study”, accepted for publication in A&A; preprint astro-ph/0703629 (2007).

A. Conley *et al.* (The Supernova Cosmology Project), ”Measurement of Ω_M , Ω_Λ from a blind analysis of Type Ia supernovae with CMAGIC: Using color information to verify the acceleration of the Universe”, ApJ, 644, 1 (2006).

G. Garavini *et al.* (The Supernova Cosmology Project), ”Spectroscopic Observations and Analysis of the Unusual Type Ia SN 1999ac”, AJ 130, 2278 (2005).

D. Acosta *et al.* (CDF Collaboration), ”Measurements of Bottom Anti-Bottom Azimuthal Production Correlations in Proton-Antiproton Collisions at $\sqrt{s}= 1.8$ TeV”, Phys. Rev. **D71**, 092001 (2005).

D. Acosta *et al.* (CDF Collaboration), “Measurement of the Forward-Backward Charge Asymmetry of Electron-Positron Pairs in Proton anti-Proton Collisions at $\sqrt{s}=1.96$ -TeV”, Phys. Rev. **D71**, 052002 (2005).

- D. Acosta *et al.* (CDF Collaboration), “Search for electroweak single top quark production in ppbar collisions at $\sqrt{s}=1.96$ TeV”, Phys. Rev. **D71**, 012005 (2005).
- D. Acosta *et al.* (CDF Collaboration), “Search for Anomalous Production of Diphoton Events with Missing Transverse Energy at CDF and Limits on Gauge-Mediated Supersymmetry-Breaking Models”, Phys. Rev. **D71**, 031104 (2005).
- D. Acosta *et al.* (CDF Collaboration), “Measurement of $W\gamma$ and $Z\gamma$ Production in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV”, Phys. Rev. Lett. **94**, 041803 (2005).
- D. Acosta *et al.* (CDF Collaboration), “Measurement of the ttbar Production Cross Section in ppbar Collisions at $\sqrt{s} = 1.96$ TeV Using Kinematic Fitting of b -tagged Lepton+Jet Events”, Phys. Rev. **D71**, 072005 (2005).
- D. Acosta *et al.* (CDF Collaboration), “First Measurement Of Inclusive W and Z Cross Sections From Run II Of The Tevatron Collider”, Phys.Rev.Lett. **94**, 091803 (2005).
- D. Acosta *et al.* (CDF Collaboration), “Search for Scalar Leptoquark Pairs Decaying to $\nu\bar{\nu}q\bar{q}$ in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV”, submitted to Phys. Rev. Lett., preprint hep-ex/0410076 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Direct Photon Cross Section With Conversions at CDF” , Phys. Rev. **D70**, 074008 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Search For Doubly-Charged Higgs Bosons Decaying To Dileptons In $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV”, Phys.Rev.Lett. **93**, 221802 (2004).
- D. Acosta *et al.* (CDF Collaboration), “The Underlying Event In Interactions At The Tevatron $\bar{p} - p$ collider”, Phys. Rev. **D70**, 072002 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Measurement of the $t\bar{t}$ Production Cross Section In $p - \bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV Using Dilepton Events”, Phys. Rev. Lett. **93**, 142001 (2004).
- T. Akimoto *et al.* (CDF Collaboration), “CDF Run IIb Silicon Detector: Electrical Performance and Deadtime-Less Operation”, IEEE Trans. Nucl. Sci. **51**, 987 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Search for the Supersymmetric Partner Of The Top Quark In Dilepton Events From $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV, Phys. Rev. Lett. **90**, 251801 (2003).
- D. Acosta *et al.* (CDF Collaboration), “Measurement of Prompt Charm Meson Production Cross Sections in $p \bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV”, Phys. Rev. Lett. **91**, 241804 (2003).
- D. Acosta *et al.* (CDF Collaboration), “Search For Long Lived Charged Massive Particles In $\bar{p}p$ Collisions at $\sqrt{s} = 1.8$ TeV”, Phys. Rev. Lett. **90**, 131801 (2003). D. Acosta *et al.* (CDF Collaboration), “Search for Kaluza-Klein Graviton Emission in $p\bar{p}$ Collisions at

- $\sqrt{s} = 1.8$ TeV using the Missing Energy Signature”, Phys. Rev. Lett. **92**, 121802 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Inclusive Search for Anomalous Production of High-pT Like-Sign Lepton Pairs in Proton-Antiproton Collisions at $\sqrt{s} = 1.8$ TeV”, Phys. Rev. Lett. **93**, 061802 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Optimized Search For Single Top Quark Production At The Fermilab Tevatron”, Phys. Rev. **D69**, 052003 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Search For Pair Production of Scalar Top Quarks in R-parity Violating Decay Modes in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV”, Phys. Rev. Lett. **92**, 051803 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Measurement Of The Polar Angle Distribution Of Leptons From W Boson Decay As A Function Of The W Transverse Momentum In Proton Anti-proton Collisions At $\sqrt{s} = 1.8$ TeV”, Phys. Rev. **D70**, 032004 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Search for $B_s \rightarrow \mu^+\mu^-$ and $B_d \rightarrow \mu^+\mu^-$ Decays in $p\bar{p}$ Collisions at $\sqrt{s}=1.96$ TeV”, Phys. Rev. Lett. **93**, 032001 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Measurement of the average time-integrated mixing probability of b -flavored hadrons produced at the Tevatron”, Phys. Rev. **D69**, 012002 (2004).
- D. Acosta *et al.* (CDF II Collaboration), “Observation of the Narrow State $X(3872) \rightarrow J/\psi\pi^+\pi^-$ in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV”, Phys. Rev. Lett. **93**, 072001 (2004).
- D. Acosta *et al.* (CDF Collaboration), “Inclusive Double Pomeron Exchange at the Fermilab Tevatron $\bar{p} - p$ Collider”, Phys.Rev.Lett. **93** (2004) 141601
- D. Acosta *et al.* (CDF Collaboration), “Search for the Flavor-Changing Neutral Current Decay $D^0 \rightarrow \mu^+\mu^-$ in $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV”, Phys. Rev. **D68** 091101 (2003).
- D. Acosta *et al.* (CDF II Collaboration), “Measurement of the Mass Difference $m(D_s^+) - m(D^+)$ at CDF II”, Phys. Rev. **D68**, 072004 (2003).
- D. Acosta *et al.* (CDF Collaboration), “Search for lepton flavor violating decays of a heavy neutral particle in $p\bar{p}$ collisions at $\sqrt{s} = 1.8$ TeV”, Phys. Rev. Lett. **91**, 171602 (2003).
- D. Acosta *et al.* (CDF Collaboration), “Central Pseudorapidity Gaps in Events with a Leading Antiproton at the Fermilab Tevatron $\bar{p} - p$ Collider” Phys. Rev. Lett. **91**, 011802 (2003).
- D. Acosta *et al.* (CDF Collaboration), “Search for the Supersymmetric Partner of the Top Quark in Dilepton Events from $p - \bar{p}$ Collisions at 1.8 TeV”, Phys. Rev. Lett. **90**, 251801 (2003).

- D. Acosta *et al.* (CDF Collaboration), “Search for a W' Boson Decaying to a Top and Bottom Quark Pair in 1.8 TeV $p - \bar{p}$ Collisions”, Phys. Rev. Lett. **90**, 081802 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Average ϕ Multiplicity In B Meson Decay”, Phys. Rev. **D69**, 052005 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fractions of Color Suppressed Decays of the \bar{B}^0 Meson to $D^{*0}\pi^0$, $D^{*0}\eta$, $D^{*0}\omega$, and $D^{*0}\eta'$ ”, Phys. Rev. **D69**, 032004 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fraction for $B^+ \rightarrow \chi(c0)K^\pm$ ”, Phys. Rev. **D69**, 071103 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of $\sin 2\beta$ with Hadronic and Previously Unused Muonic J/ψ Decays”, Phys. Rev. **D69**, 052001 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fractions and CP Asymmetry of $B \rightarrow D^0 K^-$ Decays with the BABAR Detector”, Phys. Rev. Lett. **92**, 202002 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fraction and Polarization for the Decay $B^- \rightarrow D^{*0} K^{*-}$ ”, Phys. Rev. Lett. **92**, 141801 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Inclusive Charmless Semileptonic Branching Ratio of B Mesons and Determination of V_{ub} ”, Phys. Rev. Lett. **92**, 071802 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Search for the Radiative Decays $B \rightarrow \rho\gamma$ and $B^0 \rightarrow \omega\gamma$ ”, Phys. Rev. Lett. **92**, 111801 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “ J/ψ production via initial state radiation in $e^+e^- \rightarrow \mu^+\mu^-$ gamma at an e^+e^- center-of-mass energy near 10.6 GeV”, Phys. Rev. **D69**, 011103 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Measurements of branching fractions in $B^- \rightarrow \phi K$ and $B^- \rightarrow \phi\pi$ and search for direct CP violation in $B^{\pm} \rightarrow \phi K^{\pm}$ ”, Phys. Rev. **D69**, 011102 (2004).
- B. Aubert *et al.* (BABAR Collaboration), “Simultaneous Measurement of the B^0 Meson Lifetime and Mixing Frequency with $B^0 \rightarrow D^{*-}\ell^+\nu_\ell$ Decays”, Phys. Rev. **D67**, 072002 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fraction for Inclusive Semileptonic B Meson Decays”, Phys. Rev. **D67**, 031101 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Evidence for the Rare Decay $B \rightarrow K^*\ell\ell$ and Measurement of the $B \rightarrow K\ell\ell$ Branching Fraction”, Phys. Rev. Lett. **91**, 221802 (2003).

- B. Aubert *et al.* (BABAR Collaboration), “Observation of the Decay $B^0 \rightarrow \pi^0\pi^0$ ”, Phys. Rev. Lett. **91**, 241801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Rates, Polarizations, and Asymmetries in Charmless Vector-Vector B Meson Decays”, Phys. Rev. Lett. **91**, 171802 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurements of Branching Fractions and CP-Violating Asymmetries in $B^0 \rightarrow \rho^\pm h^\pm$ Decays”, Phys. Rev. Lett. **91**, 201802 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Search for $D^0\bar{D}^0$ Mixing and a Measurement of the Doubly Cabibbo-suppressed Decay Rate in $D^0 \rightarrow K\pi$ Decays”, Phys. Rev. Lett. **91**, 171801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurements of CP-violating Asymmetries and Branching Fractions in B Meson Decays to $\eta'K$ ”, Phys. Rev. Lett. **91**, 161801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of Time-Dependent CP Asymmetries and the CP-Odd Fraction in the Decay $B^0 \rightarrow D^{*+}D^{*-}$ ”, Phys. Rev. Lett. **91**, 131801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Limits on $D^0\bar{D}^0$ Mixing and CP Violation from the Ratio of Lifetimes for Decay to $K^-\pi^+$, K^-K^+ , and $\pi^-\pi^+$ ”, Phys. Rev. Lett. **91**, 121801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Rare B Decays into States Containing a J/ψ Meson and a Meson with $s\bar{s}$ Quark Content”, Phys. Rev. Lett. **91**, 071801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Study of Time-Dependent CP Asymmetry in Neutral B Decays to $J/\psi \pi^0$ ”, Phys. Rev. Lett. **91**, 061802 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurements of the Branching Fractions and Bounds on the Charge Asymmetries of Charmless Three-Body Charged B Decays”, Phys. Rev. Lett. **91**, 051801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Observation of the Decay $B^\pm \rightarrow \pi^\pm\pi^0$, Study of $B^\pm \rightarrow K^\pm\pi^0$, and Search for $B^0 \rightarrow \pi^0\pi^0$ ”, Phys. Rev. Lett. **91**, 021801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fractions for the Exclusive Decays of B^0 and B^+ to \bar{D}^*D^*K ”, Phys. Rev. **D68**, 092001 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Observation of a Narrow Meson Decaying to $D_s^+\pi^0$ at a Mass of 2.32 GeV/ c^2 ”, Phys. Rev. Lett. **90**, 242001 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Evidence for $B^+ \rightarrow J/\psi p \bar{\Lambda}$ and Search for $B^0 \rightarrow J/\psi p\bar{p}$ ”, Phys. Rev. Lett. **90**, 231801 (2003).
- B. Aubert *et al.* (BABAR Collaboration), “Measurement of the Branching Fraction and CP-violating Asymmetries in Neutral B Decays to $D^{*\pm}D^\mp$ ”, Phys. Rev. Lett. **90**, 221801

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B. Aubert *et al.* (BABAR Collaboration), “Measurement of $B^0 \rightarrow D_s^{*+} D^{*-}$ Branching Fractions and $B^0 \rightarrow D_s^{*+} D^{*-}$ Polarization with a Partial Reconstruction Technique”, Phys. Rev. D **67**, 092003 (2003).

B. Aubert *et al.* (BABAR Collaboration), “A Study of the Rare Decays $B^0 \rightarrow D_s^{(*)+} \pi^-$ and $B^0 \rightarrow D_s^{(*)-} K^+$ ”, Phys. Rev. Lett. **90**, 181803 (2003).

B. Aubert *et al.* (BABAR Collaboration), “Measurement of the CKM Matrix Element $|V_{ub}|$ with $B \rightarrow \rho e \nu$ Decays”, Phys. Rev. Lett. **90**, 181801 (2003).

B. Aubert *et al.* (BABAR Collaboration), “Measurement of the B^0 meson lifetime with partial reconstruction of $B^0 \rightarrow D^{*-} \pi^+$ and $B^0 \rightarrow D^{*-} \rho^+$ decays”, Phys. Rev. D **67**, 091101 (2003).

B. Aubert *et al.* (BABAR Collaboration), “Study of Inclusive Production of Charmonium Mesons in B Decay”, Phys. Rev. D **67**, 032002 (2003).

C. Bozzi *et al.* (BABAR Collaboration), “Performance of the BABAR Silicon Vertex Tracker”, Nucl. Instrum. Meth. A **501**, 14 (2003).

B. Aubert *et al.* (BABAR Collaboration), “Measurements of Branching Fractions and CP-violating Asymmetries in $B^0 \rightarrow \pi^+ \pi^-$, $K^+ \pi^-$, $K^+ K^-$ Decays”, Phys. Rev. Lett. **89**, 281802 (2002).

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