Curriculum titæ

James A. Crittenden

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Office Address	Home Address
Wilson Synchrotron Laboratory	112 Larchmont Drive
Cornell University	Trumansburg, NY 14886
Ithaca, NY 14850	
Tel. (607) 255-4882	Tel. (607) 387-6544
Fax (607) 255-8062	
E–mail	WWW–page
crittenden@cornell.edu	http://www.lepp.cornell.edu/~critten/TOP.html

Birth date: May 3, 1956 — Birthplace: Aurora, Colorado, USA

Education

January, 1986	*Ph.D. Physics*	Columbia University, New York
January, 1981	*M.Phil. Physics*	Columbia University, New York
May, 1980	*A.M. Physics*	Columbia University, New York
May, 1978	*B.A. Physics*	Reed College, Portland, Oregon
June, 1976	*Premier propédeutique de la licence ès sciences physiques*	Université de Genève, Geneva, Switzerland
May, 1975	*Abitur*	Ludwig-Meyn-Schule, Uetersen, Germany
May, 1973	*Certificat pratique de langue française*	Universités de Paris, Paris, France

Experience

10/01 - present	Research Associate, Laboratory for Elementary-Particle Physics Cornell University, Ithaca, New York

On October 1, 2001, I joined the Operations Group at the Cornell Electron Storage Ring facility, which is operated by the Cornell Laboratory for Accelerator-Based Sciences and Education. My arrival coincided with a new era in CESR's history of providing colliding beams of electrons and positrons for high-statistics studies of electron-positron interactions. The CESR-c project extended such studies to the physics charm quark bound states. Operation of CESR as a charm factory began in 2003, following two years of accelerator R&D and installation work and continued through 2008. In 2008, the conversion of CESR to a test facility for accelerator facilities (CesrTA) began. An extensive measurement program on electron cloud buildup, instabilities, mitigation techniques and on low-emittance optics development ensued. The Operations group has born responsibility for ongoing CHESS operations. The lab has undertaken extensive design and development efforts for operating an Energy Recovery Linac (ERL) for X-ray science at Cornell. In 2016 two major research projects were initiated: 1) the CESR/CHESS upgrade replacing one-sixth of the ring with six double-bend achromat optics, increasing the beam energy to 6.0 GeV and reducing the emittance by a factor of four, and 2) the construction of the Cornell-Brookhaven ERL Test Accelerator CBETA, a four-pass 150-MeV electron accelerator with energy recovery and a fixed-field alternating-gradient return loop made up of permanent-magnet quadrupoles. My contributions to these endeavors are listed below.

Research Responsibilities

The analysis and modeling of CesrTA measurements of electron-cloud-induced betatron tune shifts and emittance growth in 2016 and 2017 made clear the need for a better understanding of the atomic physics processes by which electrons are photo-produced in the CESR beam pipe wall. Taking advantage of implementation of low-energy electromagnetic processes in the CERN Geant4 modeling code over the past decade, Stephen Poprocki and I have developed a post-processing module for synchrotron-radiation photon-tracking calculations which generates photoelectron production angle and momentum distributions to be used as input to the electron cloud buildup modeling code. This work was presented at ECLOUD18 (see Invited Talks below), where I also served on the International Advisory Committee. This work has now been extended to the CESR/CHESS upgrade, SuperKEKB and the 100-km-circumference Future Circular Collider (FCC) under study at CERN.

The assumption by Cornell of the responsibility for design and construction of the CBETA splitter/combiner lines, which guide the electron beams to and from the return loop as well and define the path lengths as necessary for energy recovery, entailed an extensive engineering, procurement and quality control effort for the 151 electromagnets required. I supplied the chosen vendor with initial designs for the three types of quadrupole magnets, the five types of dipole magnets, two types of vertical corrector magnets and two types of septum magnet. A number of design iterations with the engineers at Elytt Energy of Madrid, Spain, resulted in the final order. The beam-based evaluation of these magnets using data from the Fractional Arc Test in May, 2018, is ongoing. A number of the CBETA electromagnets are also being produced in-house, leading to my close collaboration with the CLASSE and other Cornell technical and engineering staffs.

Experience (continued)

Responding to recommendations from the CBETA machine review committee for model cross-checks, I developed 3D magnetic models for the permanent-magnet-based quadrupole magnets in the field-field alternating-gradient return loop optics independent of those developed at Brookhaven National lab. These have been used in tracking studies and recently for quantitative estimates of the effects of localized demagnetization due to beam losses.

A proposal to extract a positron beam from the Cornell synchrotron required development of a precise model of the combined-function magnets originally designed in 1965. Models of the wide-gap and narrow-gap versions and with and without extraction channels are now ready for use. A web page details comparisons of the calculated field with the 50-year-old design technical notes.

Responding to a variety of questions about the CESR hard-bend magnet fields, I developed a 3D model which is now likely to be of use for their future applications at JLAB.

From June, 2011 until February, 2016 I was responsible for the coordination of the machine studies experiments in CESR. This task included chairing weekly meetings and distributing the operational schedules.

A substantial portion of my time is dedicated to the authorship and editing of CesrTA publications in a variety of journals, including formulating many detailed responses to referees and editors.

The extent and variety of the CesrTA measurement program made necessary an extensive modeling effort in order to understand the physics underlying these measurements. I have extended the ECLOUD simulation package to develop diagnostic and analysis studies for measurements of cloud buildup, coherent tune shifts, resonant effects in weak magnetic fields, and of time-integrated retarding-field analyzer (RFA) and time-resolved shielded button signals operating in a dipole magnetic field, as well as of time-resolving RFA's and stripline detectors. This work includes benchmarking comparisons with other modeling codes in a wide-ranging collaborative effort. It has resulted in quantitative evaluation of the effectiveness of a wide variety of cloud-mitigating techniques, including the application of solenoidal magnetic fields, vacuum chamber surface coating, and surface groove designs.

The electron cloud modeling effort was also applied to measurements in a quadrupole magnet using a shielded stripline detector, resulting in the first quantitative observation of long-term electron trapping in a positron storage ring. These studies have also been used for the design of a detector with improved acceptance installed in a new purpose-built quadrupole magnet.

I have also applied the CesrTA-validated electron cloud modeling work to the ILC positron damping ring, the PETRA-III light source, the SuperKEKB lattices, the Cornell ERL optics, and the FCC design, as well as to the CESR/CHESS upgrade.

The electron cloud buildup calculations used as input modeling of the synchrotron radiation pattern incident on the vacuum chambers of these lattice designs as well, including the effects of diffuse and spectral photon scattering on the walls.

Experience (continued)

The analysis of the SuperKEKB design included estimates of the cloud-induced coherent betatron tune shift contributed by the final-focus quadrupole magnets, revealing shifts greater by an order of magnitude than those previously estimated in the rest of the ring.

The introduction of two undulator magnets into CESR for CHESS operation in 2014 required a great effort in lattice design and operations development. In addition to my coordination of the related machine studies experiments, I also contributed turn-by-turn injection trajectory modeling calculations to the effort, identifying geometrical aperture restrictions during the first few turns in CESR.

I contributed calculations of beam-breakup thresholds to the feasibility study for a two-pass ERL design.

I designed a beamline layout and a complete set of linear and second-order optics satisfying the design criteria of the Cornell ERL including the accelerating and decelerating passes through the linacs. This work included incorporating the present CESR layout into the design in order to allow a staged construction which reduces down time for user groups. It also included adding a second turnaround section enabling wakefield compensation strategies.

I performed field calculations for six types of magnets used in the prototype injector for the ERL.

I designed a wide-aperture quadrupole magnet for the CESR-c luminosity monitor upgrade and performed field and transfer function calculations for CLEO-solenoid-compensating solenoid magnets. The latter included calculations of the superposed CLEO solenoid field and near-IR superconducting quadrupole field errors.

Based on the wiggler magnets designed and operated for CESR-c, I developed a 12-pole model for use in the damping rings of the proposed International Linear Collider (ILC). This model is the baseline wiggler in the ILC Reference Design Report.

I performed extensive quantitative studies of the contributions of the beam-beam interaction to limits on CESR-c injection rates and luminosity. These included successful modeling of orbit distortion measurements.

The damping-dominated beam dynamics of the CESR storage ring modified to operate in the 1.5–3 GeV energy range imposed unique and stringent design specifications on the twelve 1.3-m-long superconducting wiggler magnets which provided the necessary damping. I performed studies of finite-element models and particle-tracking simulations which showed that an 8-pole wiggler model provides transfer functions which are less dependent on excitation than those of the 7-pole model developed prior to my arrival at Cornell. My investigations contributed to the decision to switch to the 8-pole model for the final twelve of the fourteen wiggler magnets being constructed.

Experience (continued)

Particle-tracking simulation code developed by the Operations group was modified to include modeling of the nonlinear effects of the wigglers on beam dynamics. The analytic functional form which I derived from fits to the finite-element calculations provided sufficient accuracy to allow the use of much faster tracking algorithms.

The beam dynamics of the electron injection procedure at low energy differed substantially from those prevailing during the development of the procedure used during the preceding decade. I adapted the special-purpose software which simulates this injection procedure to the case of low energy and studied the consequences of modifications to the transfer line vacuum systems.

Machine studies played a crucial rôle in the successful conversion of CESR to low-energy operation. My contributions to these studies included investigations of dynamic aperture, efficiency of the transfer of electrons from the synchrotron to the storage ring, beam lifetime measurements, bunch length measurements, and more.

I supervised the summer research for nineteen participants in the Research for Undergraduates program on topics ranging from CESR injection modeling, CESR lattice design and dynamic aperture calculations, electron cloud buildup modeling and CBETA magnet design and evaluation. From 2016 to 2018, these summer projects included estimates of electron cloud buildup and effects on beam dynamics for the CESR/CHESS upgrade.

I held a lecture series titled Calorimetry in High-Energy Elementary-Particle Physics at the Joint Dutch-Belgian-German Graduate School in Bad Honnef, Germany, 1-13 September 2006.

I attended two USPAS schools: a two-week course on Accelerator Fundamentals in January, 2002, and a week-long course on Magnetic Insertion Devices in June, 2002.

I was occasionally consulted on matters of data analysis and interpretation by my colleagues on the ZEUS experiment.

In response to requests from the editors, I refereed articles the journal Physical Review Special Topics - Accelerators and Beams, for the Journal of Physics G and for Nuclear Instruments and Methods.

Experience (continued)

10/00 - 9/01 Ausländischer Gastwissenschaftler, DESY, Hamburg, Germany
Visiting Scientist, Argonne National Laboratory, Chicago, Illinois

During this time, I took a one year's leave of absence from my faculty position at the University of Bonn in order to work on the design, construction, installation, and commissioning of the upgraded luminosity measurement system for the ZEUS experiment. To this purpose, DESY and the Argonne National Laboratory provided the necessary support.

Research Responsibilities

In order to take advantage of the five-fold increase in instantaneous luminosity to be provided by the HERA accelerator upgrade in 2001, major modifications to the ZEUS detector were undertaken. Among these were the addition of a high-rate e^+e^--pair spectrometer, which complemented the bremsstrahlung-photon-counting method in use from 1992 to 2000 to measure the luminosity. The photon calorimeter was rebuilt and supplemented with a synchrotron-radiation-resistant Aerogel-Čerenkov filter. These two independent luminosity measurement systems of differing rate capabilities both used measurements coincident with those of a small beam-pipe tungsten/scintillating-fiber electromagnetic calorimeter as a means of scale calibration. These new components shared a common front-end and data-acquisition system under development at the time of my work at DESY. My responsibilities entailed coordination of the various participating groups with emphasis on the three months of test-beam work from January to March, 2001, as well as on the commissioning of the readout system before HERA began operation in June. The ultimate goal of this project was to provide a reliable measurement of the HERA operating luminosity to an accuracy better than 2%.

I continued my work as co-convener of the THERA detector design subgroup which was investigating the physics opportunity presented by colliding HERA protons with electrons from the high-energy electron linear collider under design at DESY. We contributed an appendix to the linear collider technical design report which was submitted in Spring, 2001.

I served as convener for the session on Diffraction and Small-x Physics at the 31st International Symposium on Multiparticle Dynamics in Datong, China, in August, 2001.

Experience (continued)

6/97 - 9/01 Hochschullehrer, Physikalisches Institut, Universität Bonn

Upon completion of my *Habilitation* in the spring of 1997 I was awarded the title of *Privat-Dozent* and in December, 1997 I formally joined the Faculty of Mathematics and Natural Sciences as *Hochschullehrer*.

Research Responsibilities

My research responsibilities were a continuation of those during my time as *Hochschulassistent* (see description below), aside from an increased portion of my time being devoted to the preparation and presentation of invited talks at conferences and workshops related to the topic of my monograph. I also served as co-convener of the Detector Subgroup of the THERA project, which considered the feasibility of colliding the protons of HERA with the electrons of the TESLA linear e^+e^- collider under study at DESY.

Academic Responsibilities (Details can be found on my web page)

Fall semester, 1997 - Lecture course on Advanced Particle Physics

Spring semester, 1998 - Supervision of the undergraduate electronics laboratory course

Fall semester, 1998 - Supervision of the introductory physics lab course for students of chemistry and geology

Spring semester, 1999 - Lecture course on Experimental Methods in Elementary Particle Physics: Particle Detection Techniques

Fall semester, 1999 - Lecture course on Experimental Methods in Elementary Particle Physics: Data Analysis Techniques

Spring semester, 2000 - Lecture course on Introductory Particle Physics

6/91 - 5/97 Hochschulassistent, Physikalisches Institut, Universität Bonn

Research Responsibilities

My research responsibilities progressed with the needs of the ZEUS experiment at the HERA electron–proton storage rings at the Deutsches Elektronen-Synchrotron DESY during the first eleven years of operation, expanding beyond the commissioning of the detector to its long–term operation, the data analysis, the preparation of publications and the public presentation of new results.

Experience (continued)

6/91 - 5/97 (continued) Hochschulassistent
Physikalisches Institut, Universität Bonn

Research Responsibilities (continued)

During the latter half of 1991 I worked intensively on the commissioning of the switched-capacitor-based readout electronics for the ZEUS forward and rear calorimeters. I built a test stand in Bonn which was used for test and calibration prior to installation at DESY. By winter I was primarily concerned with the installation work at DESY, deeply involved in the commissioning of the calorimeter readout and its online calibration.

The first data run of the HERA accelerators in 1992 required a tremendous effort from both the accelerator and detector physicists. In the Fall and Winter of 1991/1992, my work concerned primarily the commissioning and calibration of the ZEUS calorimeters, which was a complex task due to the sophistication of the twelve thousand channels of readout electronics (c.f. research activities as *Wissenschaftlicher Mitarbeiter below*).

As data-taking started during the summer of 1992, my responsibilities shifted to the operation of the entire detector in concert with HERA, since I was one of the shift leaders employed during the running period. This activity required a broad range of knowledge concerning HERA operation, as well as of the ZEUS trigger and data acquisition systems. I continued to lead shifts in 1993 at a time when shift operations still could not be characterized as routine.

My familiarity with the online operation of the ZEUS detector led directly to offline studies of the HERA beams' RF structure and its consequences for the interaction vertex distribution, the trigger acceptance and luminosity corrections.

My earlier test beam studies of the electromagnetic energy scale and nonuniformities in the calorimeter response at cell boundaries proved useful during the analysis of the 1993 data, which improved our statistical precision for the proton structure function measurement by a factor of twenty. The redundancy in our reconstruction of kinematic variables in neutral current events permitted precise studies of the electron energy reconstruction in the rear calorimeter and these indicated differences of $\simeq 5\%$ when compared with our simulations of the calorimeter response.

Experience (continued)

6/91 - 5/97 (continued) Hochschulassistent
Physikalisches Institut, Universität Bonn

Research Responsibilities (continued)

After intense work by numerous contributors, the problems were identified as due to an imprecise modeling of structural material in the detector combined with shower development simulations of insufficient accuracy. The solution to these problems included not only software improvements, but also the development of preshower detector components.

In 1994, I began contributing to the beam tests, construction, and installation of a presampling detector to complement the function of the ZEUS calorimeter. The switched-capacitor readout technique used for the calorimeter has been developed into a standard for upgrade components in ZEUS, and this led to my playing an essential role in the commissioning of a forward neutron calorimeter, a proton–remnant tagger, and a rear beam-pipe calorimeter, as well as of the forward and rear presamplers in early 1995. I contributed to the calibration of the presampler and to the development of energy-correction algorithms based on our test beam measurements.

My work on the ZEUS data analysis was in the structure function group and in the group concerned with diffraction and vector meson production, where issues concerning calorimeter noise and energy scale play a crucial role. I served on six editorial boards for ZEUS publications, a job entailing detailed work in understanding analysis methods and the underlying physical processes.

In July, 1997, I completed a monograph concerning vector meson production in the interactions of real and virtual photons with protons. The purpose of the book is to summarize the current experimental status of investigations of the exclusive production of single vector mesons at HERA, but further sections on the historical developments leading to HERA and HERA operation during the first five years, as well as a general overview of HERA physics topics, a summary of contemporary topical phenomenology, and details of plans for future research at HERA are also included. This work was published as Nr. 140 in the series *Springer Tracts in Modern Physics* on October 6, 1997 and is available on `amazon.com`.

Experience (continued)

6/91 - 5/97 (continued) Hochschulassistent
Physikalisches Institut, Universität Bonn

Academic Responsibilities

A major portion of my time concerned the supervision of the research of the graduate students in our group in Bonn. I was directly involved in the supervision of eight doctoral theses and ten master's theses. Listed below are my undergraduate teaching duties:

Spring semester, 1991 - Taught the beginners' physics lab course

Fall semester, 1991 - Taught the advanced physics lab course for students of chemistry and geology

Spring semester, 1992 - Taught the undergraduate electronics laboratory course.

Fall semester, 1992 - Lecture course on Mathematical Methods associated with the introductory physics course for students of chemistry and geology

Spring semester, 1993 and 1996 - Supervision of the exercise sessions for Elementary Particle Physics I, including writing the problem sets.

Spring and Fall semesters, 1993-95 - Improved and maintained the apparatus for the advanced laboratory cosmic ray angular distribution and muon lifetime experiments and rewrote the associated documentation.

Fall semester, 1994 - Lecture course: Experimental Methods in Particle Physics

Fall semester, 1996 - Elementary Particle Physics for students studying to become high school teachers – Supervision and evaluation of seminars the students prepared and presented.

Experience (continued)

4/88 - 5/91 Wissenschaftlicher Mitarbeiter
Physikalisches Institut, Universität Bonn

Research Responsibilities

My activities during this postdoctoral appointment concerned the preparation of the ZEUS experiment for the study of electron-proton interactions at HERA. I joined the ZEUS Calorimeter Group and participated in the execution and data analysis of beam tests for prototype and production modules for the uranium-scintillator forward and rear calorimeter at CERN. The group's investigations in prior tests had resulted in improved measurements of hadronic shower energies in the range 10-100 GeV, exploiting the ability to tune the relative response of the calorimeter to electromagnetic and hadronic energy depositions through judicious choice of the thicknesses of the absorbing and active media. I assumed a leading role in the continuation of the test beam studies at CERN and in the analysis of data. Our goal was to understand and correct for a wide variety of systematic effects arising from construction nonuniformities, inhomogeneities near cell boundaries, and variations in the responses of the scintillator and wavelength-shifter elements. These studies established the hadronic and electromagnetic energy scale used in all ZEUS physics analyses today.

I was also responsible for the commissioning of a test facility in Bonn for the calorimeter front-end readout electronics. The 96 ns time between bunch crossings at HERA posed a novel problem for data acquisition in collider experiments. The ZEUS solution is a shaping-and-sampling scheme which provides for sampling the shaped phototube signals at the accelerator RF rate of 10.4 MHz. The analog data from the 11836 calorimeter readout channels is stored in switched-capacitor pipelines during 58 bunch crossings, allowing 6 μs for a first-level trigger decision. Each input is read out through a high-gain and a low-gain path, resulting in an effective 17-bit dynamic range, allowing precise measurements of muon energy depositions as well as those of 400 GeV hadronic showers. The sampling technique permits a measurement of the shower time relative to the accelerator RF with sub-nanosecond resolution, and has proven essential in background rejection at the trigger level and in the offline analysis. My familiarity with these issues resulted in a broad array of contributions to the ZEUS data analysis.

Experience (continued)

4/88 - 5/91 (continued) Wissenschaftlicher Mitarbeiter
Physikalisches Institut, Universität Bonn

Academic Responsibilities

During these three years in a postdoctoral research and teaching position, I supervised the doctoral research of a student investigating calibration methods for the ZEUS calorimeter. Primary themes of this work were the calibration of the calorimeter with muons and uniformity studies with electrons.

I also supervised the master's research of three students studying various aspects of the calorimeter calibration in test beams at CERN. Topics include linearity studies over the range 10-100 GeV, investigations of charge reconstruction algorithms for the shaping and sampling front-end electronics, and the uniformity of response to electrons.

Undergraduate teaching duties:

Fall semester, 1988 - Supervision of the advanced undergraduate physics lab on microwave excitation of molecular states in ammonia.

Spring semester, 1989 and 1990 - Supervision of the undergraduate electronics laboratory course.

Fall semester, 1989 - Supervision of the exercise sessions for Advanced Elementary Particle Physics II, including writing the problem sets.

Experience (continued)

2/86 - 2/88 Collaborateur temporaire étranger, Commissariat à l'Energie Atomique, Institut de Recherche Fondamentale, CEN-Saclay, 91191 Gif-sur-Yvette, France

During this first postdoctoral appointment, I joined the research group led by Pierre Bareyre at Saclay which was responsible for building the scintillating-fiber tracking- and preshower-detector for the UA2 upgrade program at the CERN SPS proton-antiproton collider. Chemists at Saclay had done pioneering work in developing scintillating-fiber technology and my goal was to familiarize myself with this first large-scale (60 km of fiber) application of the new technique. I made contributions to a variety of aspects of this project as listed below.

◇ Participation in studies of track reconstruction algorithms. My analysis of early data runs in late 1987 provided preliminary estimates of charged-track multiplicities in minimum-bias and jet triggers in high-energy proton-antiproton interactions.

◇ Responsibility for the generation of geometrical survey constants for the scintillating-fiber detector, requiring extensive analysis of recorded fiber position measurement data.

◇ Contributions to electron preshower reconstruction algorithms for the scintillating-fiber detector, entailing detailed study of track/preshower matching in test beam data.

◇ Participation in the construction of the scintillating-fiber detector, the quality control of the fibers, and the fiber position measurements.

◇ Contributions to the design and testing of clock control and front-end signal-processing electronics for the CCD readout of a prototype scintillating-fiber detector during beam tests.

◇ Analysis of light-yield spectra from scintillating fibers during the development stage of the detector.

◇ Continuing contributions to the advanced analysis of inclusive hadron production in proton-nucleus interactions for experiment 605 at FNAL.

Experience (continued)

6/84 - 1/86	Visiting Scientist, Fermi National Accelerator Laboratory
6/80 - 1/86	Graduate Research Assistant, Columbia University

After completing the coursework required for doctoral degree, I joined experiment E605 at FNAL and began my doctoral research, supervised by Leon Lederman. The principal aspects of this work are listed below.

◇ Responsibility for the measurement of hadronic production cross sections in experiment 605 at FNAL.

◇ Conducted extensive Monte Carlo simulation studies of the wire chamber/trigger scintillator system and of the hadronic calorimeter for the E605 magnetic spectrometer.

◇ Authorship of a track reconstruction algorithm for experiment 605. This tracking package continued to serve the needs of the succeeding experiments employing this spectrometer over twelve years, including experiments E772 and E866.

◇ Responsibility for the design, layout, construction, and testing of trigger latch modules with adequate time resolution to accommodate the 50 MHz RF signal of the FNAL Main Ring accelerator.

◇ Responsibility for the configuration and operation of the central data-stream formatting system (Nevis Data Transport System) of the E605 data acquisition. In particular, I commissioned a substantial upgrade of the system after the first data run in order to accommodate the input and output data streams of a data-driven trigger processor.

◇ Responsibility for the operation of 5000 channels of proportional chamber coincidence register and 2000 channels of drift chamber electronics, including the front-end preamplifiers, the discriminators, the time-to-digital converters, and the encoding interface to the Transport System.

◇ Participation in prototype drift chamber tests for experiment 605, including design studies for the analog signal-shaping preamplifiers and the discriminators designed and built at Nevis Laboratories.

Experience (continued)

9/78 - 6/80	Graduate Teaching Assistant, Columbia University Taught undergraduate physics laboratory courses.
6/79 - 8/79	Employed by Nevis Laboratories, Columbia University During my first summer at Nevis, I was employed by the CUSB group led by Paolo Franzini, building electronics with Dean Schamberger and drift chambers with Steve Herb.
5/77 - 8/77 and 5/78 - 8/78	Employed by the Stanford Linear Accelerator Center During the summers following my junior and senior years at Reed College, I worked for Marty Breidenbach at SLAC. The first summer was spent working on diagnostic tests of drift chamber data acquisition electronics for the MARK II experiment. During the second summer I participated in development work on the drift chamber with inductive delay-line readout for the MARK II luminosity monitor.

Foreign Languages

My eighteen years in Europe permitted me to reach an advanced degree of proficiency in conversational and technical French and German in both spoken and written form. My work at Saclay was carried out exclusively in French, and my work in Bonn exclusively in German, aside from contributions to the Bonn International Physics Programme.

Selected Publications

The following publications exemplify my writing style.

Articles

1. *Initial Performance of the Magnet System in the Splitter/Combiner Section of the Cornell-Brookhaven Energy-Recovery Linac Test Accelerator*
   J.A. Crittenden *et al.*, Proceedings of the 9th International Particle Accelerator Conference, 29 April - 4 May, 2018, Vancouver, BC, Canada

2. *Modeling Studies for Synchrotron-radiation-induced Electron Production in the Vacuum Chambers Walls at CesrTA*
   S. Poprocki *et al.*, Proceedings of the 9th International Particle Accelerator Conference, 29 April - 4 May, 2018, Vancouver, BC, Canada

3. *Progress in Detector Design and Installation for Measurements of Electron Cloud Trapping in Quadrupole Magnetic Fields at CesrTA*
   J.A. Crittenden *et al.*, Proceedings of the 7th International Particle Accelerator Conference, 8-13 May, 2016, Busan, Korea

4. *Magnet Design for the Splitter/Combiner Regions of CBETA, the Cornell-Brookhaven Energy-Recovery-Linac Test Accelerator*
   J.A. Crittenden *et al.*, Proceedings of the 2016 North American Particle Accelerator Conference, 9-14 October, 2016, Chicago, Illinois, USA

5. *Electron Cloud Simulations for the Low-Emittance Upgrade at the Cornell Electron Storage Ring*
   J.A. Crittenden *et al.*, Proceedings of the 2016 North American Particle Accelerator Conference, 9-14 October, 2016, Chicago, Illinois, USA

6. *Progress in Detector Design and Installation for Measurements of Electron Cloud Trapping in Quadrupole Magnetic Fields at CesrTA*
   J.A. Crittenden *et al.*, Proceedings of the 7th International Particle Accelerator Conference, 8-13 May, 2016, Busan, Korea

7. *Measurement of Electron Trapping in the Cornell Electron Storage Ring*
   M.G. Billing *et al.*, *Phys. Rev. ST Accel. Beams* **18**, 041004 (April, 2015).

8. *Synchrotron Radiation Analysis of the SuperKEKB Positron Storage Ring*
   J.A. Crittenden *et al.*, Proceedings of the 6th International Particle Accelerator Conference, 3-7 May, 2015, Richmond, Virginia, USA

9. *Initial Modeling of Electron Cloud Buildup in the Final-Focus Quadrupole Magnets of the SuperKEKB Positron Ring*
   J.A. Crittenden, Proceedings of the 6th International Particle Accelerator Conference, 3-7 May, 2015, Richmond, Virginia, USA

Selected Publications (continued)

The following publications exemplify my writing style.

10. *Numerical Modeling for CesrTA Measurements of Electron Cloud Buildup in a Quadrupole Magnet*
J.A. Crittenden *et al.*, Proceedings of the 5th International Particle Accelerator Conference, 16-20 June 2014, Dresden, Germany

11. *Shielded Button Electrodes for Time-Resolved Measurements of Electron Cloud Buildup*
J.A. Crittenden *et al.*, *Nucl. Instrum. Methods Phys. Res.* **A749**, p. 42–46 (June, 2014).

12. *Investigation into Electron Cloud Effects in the International Linear Collider Positron Damping Ring*
J.A. Crittenden *et al.*, *Phys. Rev. ST Accel. Beams* **17**, 031002 (March, 2014).

13. *Modeling for Time-Resolved Retarding Field Analyzer Measurements of Electron Cloud Buildup at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 4th International Particle Accelerator Conference, 12-17 May, 2013, Shanghai, China

14. *Electron Cloud Buildup Characterization Using Shielded Pickup Measurements and Custom Modeling Code at CesrTA*
J.A. Crittenden & J.P. Sikora, *Proceedings of ECLOUD 2012: Joint INFN-CERN-EuCARD-AccNet Workshop on Electron-Cloud Effects, La Biodola, Elba, Italy*, R. Cimino, G. Rumolo & F. Zimmermann, Eds., CERN, Geneva, Switzerland (2013), CERN-2013-002, p. 241–250.

15. *Investigation into Electron Cloud Effects in the ILC Damping Ring Design*
J.A. Crittenden *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

16. *Time-Resolved Shielded-Pickup Measurements and Modeling of Beam Conditioning Effects on Electron Cloud Buildup at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

17. *Electron Cloud Modeling for the ILC Damping Rings*
J.A. Crittenden *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

18. *Electron Cloud Modeling Results for Time-Resolved Shielded Pickup Measurements at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

Selected Publications (continued)

The following publications exemplify my writing style.

19. *Electron Cloud Modeling Results for Time-Resolved Shielded Pickup Measurements at CesrTA*
J.A. Crittenden *et al.*, *Proceedings of ECLOUD 2010: 49th ICFA Advanced Beam Dynamics Workshop on Electron Cloud Physics, Ithaca, NY*, K. Smolenski, Ed., Cornell University, Ithaca, NY, (2013), p. 123–129.

20. *Progress in Studies of Electron-cloud-induced Optics Distortions at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2010 International Particle Accelerator Conference, 23-28 May, 2010, Kyoto, Japan

21. *Recent Progress on Beam-Breakup Calculations for the Cornell X-Ray ERL*
J.A. Crittenden *et al.*, Proceedings of the 45th ICFA Beam Dynamics Workshop on Energy Recovery Linacs, 8-12 June 2009, Cornell University, Ithaca, New York

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Exclusive Production of Neutral Vector Mesons at the Electron-Proton Collider HERA
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146. *Test of the ZEUS Forward Calorimeter Prototype*
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147. *Response of a Uranium-Scintillator Calorimeter to Electrons, Pions, and Protons in the Momentum Range 0.5 - 10 GeV/c*
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149. *Consequences of the ZEUS Calorimeter Electron Response Uniformity for the Reconstruction of Neutral Current Events*
J.A.Crittenden and R.Yoshida, Proceedings of the HERA Workshop Vol. 1, 121 (1991)

150. *The Performance of the ZEUS Calorimeter*
Contribution to the proceedings of the V International Conference on Calorimetry, Brookhaven National Laboratory, DESY Report 94-234 (1994)

151. *The Presampler for the Forward and Rear Calorimeter in the ZEUS Detector*
A. Bamberger *et al.*, Nucl. Instrum. Methods A382, 419 (1996)

152. *Recent Results from Investigations of Diffractive Vector Meson Production with the ZEUS Detector at HERA*
Contribution to the proceedings of Photon '97, the International Conference on the Structure and Interactions of the Photon
Egmond aan Zee, the Netherlands, 10-15 May 1997, LANL preprint hep-ex/9709031

153. *Scale Issues in High-Energy Diffractive Vector-Meson Production*
Contribution to the proceedings of the LAFEX School for High-Energy Physics
Rio de Janeiro, Brazil, February 1998, LANL preprint hep-ex/9806020

154. *Results on Diffractive Processes from the HERA Collider Experiments*
Contribution to the proceedings of the EPIC'99 Workshop
Bloomington, Indiana, April 1999, LANL preprint hep-ex/9908023

155. *Recent Results from Decay-Angle Analyses of ρ^0 Photoproduction at High Momentum Transfer from ZEUS*
Contribution to the proceedings of the DIS'99 Workshop
DESY/Zeuthen, Germany, April 1999, LANL preprint hep-ex/9906005

156. *Topical Results on Vector-Meson Production from ZEUS and H1*
Contribution to the proceedings of the Joint INT/Jefferson Lab Workshop on Exclusive and Semi-exclusive Processes at High Momentum Transfer
Newport News, Virginia, May 1999, LANL preprint hep-ex/9910068

157. *Measurements of Diffractive Vector-Meson Photoproduction at High Momentum Transfer from the ZEUS Experiment at HERA*
Contribution to the proceedings of the meeting of the Division of Particles and Fields of the American Physical Society, Columbus, Ohio, August 2000, hep-ex/0010079

158. *The THERA Project - Physics and Experimentation*
H. Abramowicz *et al.*, Contribution to the TESLA Technical Design Report
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Further Publications (continued)

159. *Experimental Results on the Diffractive Production of Light Vector Mesons at HERA*
Contribution to the proceedings of the Ringberg Workshop in New Trends in HERA Physics 2001, 17-22 June 2001, Ringberg Castle, Tegernsee, Germany, hep-ex/0110040
160. *A Magnetic Field Model for Wigglers and Undulators*
D. Sagan, J.A. Crittenden and D. Rubin, Proceedings of the 2003 Particle Accelerator Conference, edited by J. Chew, P. Lucas, and S. Webber, 12-16 May 2003, Portland, Oregon, p. 1023
161. *Design Considerations for the CESR-c Wiggler Magnets*
J.A. Crittenden, A. Mikhailichenko and A. Temnykh, Proceedings of the 2003 Particle Accelerator Conference, edited by J. Chew, P. Lucas, and S. Webber, 12-16 May 2003, Portland, Oregon, p. 1954
162. *Beam-Based Characterization of a New 7-Pole Wiggler at CESR*
A. Temnykh, J.A. Crittenden, D.H. Rice, D.L. Rubin, Proceedings of the 2003 Particle Accelerator Conference, edited by J. Chew, P. Lucas, and S. Webber, 12-16 May 2003, Portland, Oregon, p. 3425
163. *Recent Developments for Injection into CESR*
M. G. Billing, J. A. Crittenden and M. A. Palmer, ICFA Beam Dyn. Newslett. **31**, p. 58 (2003)
164. *A Magnetic Field model for Wigglers and Undulators*
D. Sagan, J. A. Crittenden, D. Rubin and E. Forest, ICFA Beam Dyn. Newslett. **31**, p. 48 (2003)
165. *Design, Fabrication and Characterization of a Large-Aperture Quadrupole Magnet for CESR-c*
M.A. Palmer, J.A. Crittenden, J. Kandaswamy, T.O'Connell and A.Temnykh, Proceedings of the 2005 Particle Accelerator Conference, 16-20 May 2005, Knoxville, Tennessee
166. *Field Modeling for the CESR-c Superconducting Wiggler Magnets*
J.A. Crittenden, A. Mikhailichenko, E. Smith, K. Smolenski and A. Temnykh, Proceedings of the 2005 Particle Accelerator Conference, 16-20 May 2005, Knoxville, Tennessee
167. *A Study of the Effects of Beam-Beam Interactions on CESR Optics*
M.G. Billing, J.A. Crittenden and D.L. Rubin, Proceedings of the 2005 Particle Accelerator Conference, 16-20 May 2005, Knoxville, Tennessee
168. *Investigations of Injection Orbits at CESR Based on Turn-by-Turn BPM Measurements*
M.G. Billing, J.A. Crittenden and M.A. Palmer, Proceedings of the 2005 Particle Accelerator Conference, 16-20 May 2005, Knoxville, Tennessee
169. *Operational Status of CESR-c*
J.A. Crittenden, Proceedings of the 2006 European Particle Accelerator Conference, 26-30 June 2006, Edinburgh, Scotland

Further Publications (continued)

170. *Studies of the Beam-Beam Interaction at CESR*
J.A. Crittenden and M.G. Billing, Proceedings of the 2006 European Particle Accelerator Conference, 26-30 June 2006, Edinburgh, Scotland

171. *Design Considerations and Modeling Results for ILC Damping Ring Wigglers Based on the CESR-c Superconducting Wiggler*
M.A. Palmer, J.A. Crittenden and J.Urban, Proceedings of the 2007 Particle Accelerator Conference, 25-29 June 2007, Albuquerque, New Mexico

172. *Compensation Strategy for Optical Distortions Arising from the Beam-beam Interaction at CESR*
M.G. Billing and J.A. Crittenden, Proceedings of the 2007 Particle Accelerator Conference, 25-29 June 2007, Albuquerque, New Mexico

173. *Challenges for Beams in an ERL Extension to CESR*
G.Hoffstaetter et al, Proceedings of the 2008 European Particle Accelerator Conference, 23-27 June 2008, Genoa, Italy

174. *Studies of the Effects of Electron Cloud Formation on Beam Dynamics at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2009 Particle Accelerator Conference, 4-8 May 2009, Vancouver, British Columbia, Canada

175. *The Conversion and Operation of the Cornell Electron Storage Ring as a Test Accelerator (CesrTA) for Damping Rings Research and Development*
M.A. Palmer *et al.*, Proceedings of the 2009 Particle Accelerator Conference, 4-8 May 2009, Vancouver, British Columbia, Canada

176. *Simulations of Electron-Cloud Current Density Measurements in Dipoles, Drifts and Wigglers at CesrTA*
J.R. Calvey *et al.*, Proceedings of the 2009 Particle Accelerator Conference, 4-8 May 2009, Vancouver, British Columbia, Canada

177. *Developments for Cornell's X-Ray ERL*
J.A. Crittenden *et al.*, Proceedings of the 2009 Particle Accelerator Conference, 4-8 May 2009, Vancouver, British Columbia, Canada

178. *Electron Cloud Modeling Considerations at CesrTA*
J.R. Calvey *et al.*, Proceedings of the 2009 Particle Accelerator Conference, 4-8 May 2009, Vancouver, British Columbia, Canada

179. *Recent Progress on Beam-Breakup Calculations for the Cornell X-Ray ERL*
J.A. Crittenden *et al.*, Proceedings of the 45th ICFA Beam Dynamics Workshop on Energy Recovery Linacs, 8-12 June 2009, Cornell University, Ithaca, New York

180. *Progress in Studies of Electron-cloud-induced Optics Distortions at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2010 International Particle Accelerator Conference, 23-28 May, 2010, Kyoto, Japan

Further Publications (continued)

181. *Recommendation for the Feasibility of More Compact LC Damping Rings*
M.T.F. Pivi *et al.*, Proceedings of the 2010 International Particle Accelerator Conference, 23-28 May, 2010, Kyoto, Japan

182. *Electron Cloud at Low Emittance in CesrTA*
M.A. Palmer *et al.*, Proceedings of the 2010 International Particle Accelerator Conference, 23-28 May, 2010, Kyoto, Japan

183. *CesrTA Retarding Field Analyzer Modeling Results*
J.R. Calvey *et al.*, Proceedings of the 2010 International Particle Accelerator Conference, 23-28 May, 2010, Kyoto, Japan

184. *Electron Cloud Modeling Results for Time-Resolved Shielded Pickup Measurements at CesrTA*
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185. *Methods for Quantitative Interpretation of Retarding Field Analyzer Data*
J.R. Calvey *et al.*, *Proceedings of ECLOUD 2010: 49th ICFA Advanced Beam Dynamics Workshop on Electron Cloud Physics, Ithaca, NY*, K. Smolenski, Ed., Cornell University, Ithaca, NY, (2013), p. 91-94.

186. *Using Coherent Tune Shifts to Evaluate Electron Cloud Effects on Beam Dynamics at CesrTA*
D.L. Kreinick *et al.*, *Proceedings of ECLOUD 2010: 49th ICFA Advanced Beam Dynamics Workshop on Electron Cloud Physics, Ithaca, NY*, K. Smolenski, Ed., Cornell University, Ithaca, NY, (2013), p. 130-133.

187. *Electron Cloud Modeling Results for Time-Resolved Shielded Pickup Measurements at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

188. *Methods for Quantitative Interpretation of Retarding Field Analyzer Data*
J.R. Calvey *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

189. *Application of Coherent Tune Shift Measurements to the Characterization of Electron Cloud Growth*
D.L. Kreinick *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

190. *Time Resolved Measurement of Electron Clouds at CesrTA Using Shielded Pickups*
J.P. Sikora *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

191. *Electron Cloud Modeling for the ILC Damping Rings*
J.A. Crittenden *et al.*, Proceedings of the 2011 Particle Accelerator Conference, 3/28-4/1, 2011, New York, New York, USA

Further Publications (continued)

192. *Application of the SYNRAD3D Photon-Tracking Model to Shielded Pickup Measurements of Electron Cloud Buildup at CesrTA*
L. Boon *et al.*, Proceedings of the 2011 International Particle Accelerator Conference, 4-9 September, 2011, San Sebastián, Sp

193. *Unified Accelerator Modeling Using the Bmad Software Library*
D.C. Sagan *et al.*, Proceedings of the 2011 International Particle Accelerator Conference, 4-9 September, 2011, San Sebastián, Spain

194. *A Comparison of Electron Cloud Density Measurements Using Shielded Pickups and TE Waves at CesrTA*
J.P. Sikora *et al.*, Proceedings of the Beam Instrumentation Workshop, 15-19 April, 2012, Newport News, Virginia, USA

195. *Time-Resolved Shielded-Pickup Measurements and Modeling of Beam Conditioning Effects on Electron Cloud Buildup at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

196. *Wiggler Magnet Design Development for the ILC Damping Rings*
J.A. Crittenden, M.A. Palmer, and D.L. Rubin, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

197. *Investigation into Electron Cloud Effects in the ILC Damping Ring Design*
J.A. Crittenden *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

198. *Characterization of Single Particle Dynamics for the International Linear Collider Damping Ring Lattice*
J. Shanks *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

199. *Studies at CesrTA of Electron-Cloud-Induced Beam Dynamics for Future Damping Rings*
G.F. Dugan *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

200. *Modeling and Simulation of Retarding Field Analyzers at CesrTA*
J.R. Calvey *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

201. *3-Dimensional Modeling of Electron Clouds in Non-Uniform Magnetic Fields*
S.A. Veitzer *et al.*, Proceedings of the 2012 International Particle Accelerator Conference, 20-25 May, 2012, New Orleans, Louisiana, USA

202. *Observations and Predictions at CesrTA, and Outlook for ILC*
G.F. Dugan *et al.*, *Proceedings of ECLOUD 2012: Joint INFN-CERN-EuCARD-AccNet Workshop on Electron-Cloud Effects, La Biodola, Elba, Italy*, R. Cimino, G. Rumolo & F. Zimmermann, Eds., CERN, Geneva, Switzerland (2013), CERN-2013-002, p. 31–41.

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203. *Electron Cloud Buildup Characterization Using Shielded Pickup Measurements and Custom Modeling Code at CesrTA*
J.A. Crittenden and J.P. Sikora, *Proceedings of ECLOUD 2012: Joint INFN-CERN-EuCARD-AccNet Workshop on Electron-Cloud Effects, La Biodola, Elba, Italy*, R. Cimino, G. Rumolo & F. Zimmermann, Eds., CERN, Geneva, Switzerland (2013), CERN-2013-002, p. 241–250.

204. *Electron Cloud Density Measurements using Resonant TE Waves at CesrTA*
J.P. Sikora *et al.*, Proceedings of the 1st International Beam Instrumentation Conference, 1-4 October, 2012,Tsukuba, Japan

205. *Modeling for Time-Resolved Retarding Field Analyzer Measurements of Electron Cloud Buildup at CesrTA*
J.A. Crittenden *et al.*, Proceedings of the 4th International Particle Accelerator Conference, 12-17 May, 2013, Shanghai, China

206. *Changes in Electron Cloud Density with Beam Conditioning at CesrTA*
J.P. Sikora *et al.*, Proceedings of the 2013 North American Particle Accelerator Conference, 9/29-10/4, Pasadena, California, USA

207. *Electron Cloud Measurements Using a Shielded Pickup in a Quadrupole at CesrTA*
J.P. Sikora *et al.*, Proceedings of the 2013 North American Particle Accelerator Conference, 9/29-10/4, Pasadena, California, USA

208. *Resonant TE Wave Measurement of Electron Cloud Density Using Multiple Sidebands*
J.P. Sikora *et al.*, Proceedings of the 2nd International Beam Instrumentation Conference, 16-19 September, 2013, Oxford, UK

209. *A Comparison of Electron Cloud Density Measurements at CesrTA*
J.P. Sikora *et al.*, Proceedings of the 4th International Particle Accelerator Conference, 12-17 May, 2013, Shanghai, China

210. *Cross-Calibration of Three Electron Cloud Density Detectors at CesrTA*
J.P. Sikora, J.R. Calvey & J.A. Crittenden, Proceedings of the 3rd International Beam Instrumentation Conference, 14-18 September, 2014, Monterey, California, USA

211. *Initial Modeling of Electron Cloud Buildup in the Final-Focus Quadrupole Magnets of the SuperKEKB Positron Ring*
J.A. Crittenden, Proceedings of the 6th International Particle Accelerator Conference, 3-7 May, 2015, Richmond, Virginia, USA

212. *Synchrotron Radiation Analysis of the SuperKEKB Positron Storage Ring*
J.A. Crittenden *et al.*, Proceedings of the 6th International Particle Accelerator Conference, 3-7 May, 2015, Richmond, Virginia, USA

213. *The Conversion of CESR to Operate as the Test Accelerator CesrTA,Par3: Electron Cloud Diagnostics*
M.G. Billing, *et al.*, JINST 11 Nr 4 (2016), P04025

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214. *Incoherent Vertical Emittance Growth from Electron Cloud at CesrTA*
S. Poprocki *et al.*, Proceedings of the 7th International Particle Accelerator Conference, 8-13 May, 2016, Busan, Korea

215. *Electron Cloud Simulations for the Low-Emittance Upgrade at the Cornell Electron Storage Ring*
J.A. Crittenden *et al.*, Proceedings of the 7th International Particle Accelerator Conference, 8-13 May, 2016, Busan, Korea

216. *Upgrade of the Cornell Electron Storage Ring as a Synchrotron Light Source*
D.L. Rubin *et al.*, Proceedings of the 2016 North American Particle Accelerator Conference, 9-14 October, 2016, Chicago, Illinois, USA

217. *Probabilistic Estimation of Low Energy Electron Trapping in Quadrupoles*
K. Sonnad and J.A. Crittenden, Proceedings of the 2016 North American Particle Accelerator Conference, 9-14 October, 2016, Chicago, Illinois, USA

218. *Design of an Electron Coud Detector in a Quadrupole Magnet at CesrTA*
J. Sikora, *et al.*, Proceedings, 5th International Beam Instrumentation Conference (IBIC 2016), 11-15 September, 2016, Barcelona, Spain

219. *The Beam Optics of the FFAG Cell of the CBETA ERL Accelerator*
N. Tsoupas *et al.*, Proceedings of the 8th International Particle Accelerator Conference, 14-19 May, 2017, Copenhagen, Denmark

220. *CBETA - Cornell University Brookhaven National Laboratory Electron Energy Recovery Test Accelerator*
D. Trbojevic *et al.*, Proceedings of the 8th International Particle Accelerator Conference, 14-19 May, 2017, Copenhagen, Denmark

221. *Dependence of the Coupling of Dipole Motion From Bunch to Bunch Caused by Electron Clouds at CesrTA Due to Variations in Bunch Length and Chromaticity*
M.G. Billing *et al.*, Proceedings of the 8th International Particle Accelerator Conference, 14-19 May, 2017, Copenhagen, Denmark

222. *Initial Data From an Electron Cloud Detector in a Quadrupole Magnet at CesrTA*
J. Sikora *et al.*, Proceedings of the 8th International Particle Accelerator Conference, 14-19 May, 2017, Copenhagen, Denmark

223. *Beam-Breakup Studies for the 4-Pass Cornell-Brookhaven Energy Recovery LINAC Test Accelerator*
W. Lou, J.A. Crittenden and G.H. Hoffstaetter, Proceedings of the 8th International Particle Accelerator Conference, 14-19 May, 2017, Copenhagen, Denmark

224. *CBETA Design Report, Cornell-BNL Test Accelerator*
G.H. Hoffstaetter *et al.*, ARXIV:1706.04245 (2017)

225. *Progress in Measurement and Modeling of Electron Cloud Effects at CesrTA*
S. Poprocki *et al.*, Proceedings of the 9th International Particle Accelerator Conference, 29 April - 4 May, 2018, Vancouver, BC, Canada

Invited Talks

1. *The E605 Data Acquisition System*
   Research Techniques Seminar
   Fermi National Accelerator Laboratory, Batavia, Illinois, USA (6/1984)

2. *Experiment 605 at Fermilab*
   Particle Physics Seminar
   State University of New York at Stony Brook, New York, USA (3/1985)

3. *Experiment 605 – A Study of the Production of Leptons and Hadrons Near the Kinematic Limit*
   Particle Physics Colloquium
   Fermi National Accelerator Laboratory, Batavia, Illinois, USA (8/1985)

4. *Experiment 605 at FNAL – A Student's Tale of Forsaken Innocence*
   Particle Physics Seminar
   University of Michigan, Ann Arbor, USA (9/1985)

5. *Expérience 605 à Fermilab*
   Centre d'Études Nucléaires, Saclay, France (6/1986)

6. *The Production of Hadrons with High Transverse Momenta in 400 and 800 GeV/c Proton-Nucleus Interactions*
   22nd Rencontre de Moriond, Session on Hadrons, Quarks, and Gluons
   Moriond, France (3/1987)

7. *The Construction of a Scintillating-Fiber Tracking and Preshower Detector for the UA2 Improvement Program*
   III Topical Seminar on Perspectives for Experimental Apparatus at Future High Energy Machines
   San Miniato, Italy (3/1988)

8. *The Scintillating-Fiber Tracking and Preshower Detector for the UA2 Improvement Program*
   Particle Physics Seminar, University of Washington
   Seattle, Washington, USA (5/1987)

9. *The Scintillating-Fiber Tracking and Preshower Detector for the UA2 Improvement Program*
   Particle Physics Seminar, Physikalisches Institut der Universität Bonn
   Bonn, Germany (5/1988)

10. *The ZEUS Experiment at HERA*
    Particle Physics Seminar, University of Arizona
    Tucson, Arizona, USA (3/1989)

11. *Developments in Uranium-Scintillator Calorimetry for the ZEUS Detector*
    Particle Physics Seminar, Indiana University
    Bloomington, Indiana, USA (5/1990)

Invited Talks (continued)

12. *Erste Erfahrungen mit dem Betrieb des ZEUS-Detektors bei HERA*
    Particle Physics Seminar, Physikalisches Institut der Universität Bonn
    Bonn, Germany (10/1992)

13. *Erste Ergebnisse des ZEUS-Detektors am Elektron-Proton-Speicherring HERA*
    Plenary Talk, Spring Meeting, German Physical Society
    Mainz, Germany (3/1993)

14. *The Performance of the ZEUS Calorimeter*
    V International Conference on Calorimetry
    Brookhaven National Laboratory, New York, USA (9/1994)

15. *Physik bei HERA – Untersuchungen der Elektron–Proton–Streuung bei 300 GeV Schwerpunktsenergie*
    Institut für Strahlungs– und Kernphysik, Universität Bonn
    Bonn, Germany (1/1996)

16. *Total Photon–Proton Cross Sections and Exclusive Vector Meson Production at HERA*
    Max Planck Institut für Kernphysik
    Heidelberg, Germany (11/1996)

17. *Exclusive Production of Neutral Vector Mesons at the Electron–Proton Collider HERA*
    NIKHEF
    Amsterdam, The Netherlands (3/1997)

18. *Recent Results from Investigations of Diffractive Vector Meson Production with the ZEUS Detector at HERA*
    Photon '97, the International Conference on the Structure and Interactions of the Photon
    Egmond aan Zee, The Netherlands (5/1997)

19. *Scale Issues in High-Energy Diffractive Vector-Meson Production at HERA*
    LAFEX School for High-Energy Physics
    Rio de Janeiro, Brazil (2/1998)

20. *Recent Results on Diffractive Vector-Meson Production from ZEUS*
    HERA Low-x Workshop
    DESY/Zeuthen, Berlin, Germany (6/1998)

21. *Hard Diffractive Vector-Meson Production*
    Workshop on Coherent QCD Processes
    European Centre for Theoretical Studies
    Trento, Italy (9/1998)

Invited Talks (continued)

22. *New Perspectives on Exclusive Diffractive Processes in High-Energy Photon-Proton Interactions*
    Particle Physics Seminar, Carnegie Mellon University, Pittsburgh, PA, and
    Journal Club Seminar, Cornell University, Ithaca, New York (11/1998)

23. *Results from ZEUS and H1 on Diffractive Processes*
    EPIC'99 Workshop, Indiana University Cyclotron Facility,
    Bloomington, Indiana (4/1999)

24. *Recent Results from Decay-Angle Analyses of ρ^0 Photoproduction at High Momentum Transfer from ZEUS*
    DIS'99 Workshop, DESY/Zeuthen, Berlin, Germany (4/1999)

25. *Topical Results on Vector-Meson Production from ZEUS and H1*
    Joint INT/Jefferson Lab Workshop on Exclusive and Semi-exclusive Processes at High Momentum Transfer, Newport News, Virginia (5/1999)

26. *Applications of QCD in Studies of Diffractive Processes at HERA*
    Lecture at the Graduiertenkolleg "Physics of the Strong Interaction", University of Regensburg, Germany (6/1999)

27. *The ZEUS Uranium/Scintillator Calorimeter – Calibration Systems and Procedures*
    Indiana University Cyclotron Facility Workshop on Electromagnetic Calorimetry, Bloomington, Indiana (9/1999)

28. *Recent Studies at HERA of the Helicity Structure of Diffractive Vector-Meson Production*
    Particle Physics Seminar held at Warsaw University, Warsaw, Poland (11/1999)

29. *Streueexperimente zur Erforschung her Struktur der Materie: Bilanz und Perspektiven*
    Particle Physics Seminar held at the University of Karlsruhe (5/2000)

30. *Electron-Proton Scattering at $\sqrt{s} = 1\ TeV$: Report from the THERA Study Group*
    Particle Physics Seminar held at DESY/Zeuthen (1/2001)

31. *Scaling Properties of High-Energy Diffractive Vector-Meson Production at High Momentum Transfer*
    Talk at the workshop High Energy QCD: Beyond the Pomeron, Brookhaven National Laboratory, Upton, New York (5/2001)

32. *Experimental Results on the Production of Light Vector Mesons*
    Talk at the Ringberg Workshop on New Trends in HERA Physics 2001, Ringberg Castle, Tegernsee, Germany (6/2001)

33. *Scaling Laws and Helicity Selection at HERA*
    Particle Physics Seminar held at the University of Dortmund (7/2001)

34. *The Rôle of Scattering Experiments in the Understanding of the Structure of Matter*
    Cornell Society of Physics Students Colloquium, Cornell University (10/2002)

Invited Talks (continued)

35. *Calorimetry in High-Energy Elementary-Particle Physics*
    Joint Dutch/Belgian/German Graduate School, Physikzentrum, Bad Honnef, Germany, (9/2006)

36. *Developments for Cornell's X-Ray ERL*
    2009 Particle Accelerator Conference, Vancouver, British Columbia, Canada (5/2009)

37. *Electron Cloud Modeling Results for Time-Resolved Shielded Pickup Measurements at CesrTA*
    49th ICFA Advanced Beam Dynamics Workshop on Electron Cloud Physics, Ithaca, NY (10/2010)

38. *Baseline Damping Ring Lattice Design Status*
    International Workshop on Future Linear Colliders, Granada, Spain, (9/2011)

39. *Electron Cloud Buildup Models and Plans*
    International Workshop on Future Linear Colliders, Granada, Spain, (9/2011)

40. *Electron Cloud Buildup Characterization Using Shielded Pickup Measurements and Custom Modeling Code at CesrTA*
    ECLOUD12, Joint INFN-CERN-EuCARD-AccNet Workshop on Electron-Cloud Effects, La Biodola, Elba, Italy (6/2012)

41. *Recent Electron Cloud Studies at CesrTA*
    International Workshop on Future Linear Colliders, Arlington, Texas, USA (10/2012)

42. *Measurement and Modeling of Electron Cloud Trapping in the CESR Storage Ring*
    Low-Emittance Rings Workshop, INFN-LNF, Frascati, Italy (9/2014)

43. *The CESR/CHESS Upgrade at Cornell University*
    Low-Emittance Rings Workshop, Soleil, Paris, France (10/2016)

44. *Simulations of Synchrotron-radiation-induced Electron Production in the CESR Vacuum Chamber Wall*
    ECLOUD18, La Biodola, Elba, Italy (6/2018)

Contributed Talks

45. *The Angular Dependence of Single Hadron Production in Proton-Nucleus Collisions at High X_T*
Division of Particles and Fields, American Physical Society
Eugene, Oregon, USA (10/1985)

46. *Das Uran/Szintillator-Kalorimeter für das ZEUS-Experiment bei HERA*
Spring Meeting, German Physical Society
Aachen, Germany (3/1991)

47. *The Anomalous Nuclear Enhancement of High Transverse Momentum Hadron Production in Proton-Nucleus Interactions*
HERA Workshop, DESY (9/1995)

48. *Detector Design Considerations for a TESLA+HERA ep Collider*
THERA Workshop, DESY (2/2000)

49. *Measurements of Diffractive Vector-Meson Photoproduction at High Momentum Transfer from the ZEUS Experiment at HERA*
Division of Particles and Fields, American Physical Society
Columbus, Ohio (8/2000)

50. *Prospects for Measurements of Vector-Meson Photoproduction at High Momentum Transfer at THERA*
THERA Workshop, DESY (10/2000)

51. *Operational Status of CESR-c*
April Meeting of the American Physical Society, Denver, Colorado (5/2004)

52. *Operational Status of CESR-c*
J.A. Crittenden, 2006 European Particle Accelerator Conference, Edinburgh, Scotland (6/2006)

53. *ECLOUD Simulations for CESR Witness Bunch Tune Shift Measurements*
Joint CesrTA Kickoff Meeting and ILC Damping Rings R&D Workshop, Cornell University (7/2008)

54. *Modeling Cyclotron Resonances in ECLOUD*
CesrTA Electron Cloud R&D Program for Linear Collider Damping Rings, Cornell University, Ithaca, New York (6/2009)

55. *Recent Progress on Beam-Breakup Calculations for the Cornell X-Ray ERL*
45th ICFA Beam Dynamics Workshop on Energy Recovery Linacs, Cornell University, Ithaca, New York (6/2009)

56. *CesrTA Electron Cloud Measurements and Simulations*
Anti-E-Cloud Coatings, AEC09, CERN, Geneva, Switzerland (10/1009)

57. *Electron Cloud Simulation Studies for CesrTA*
CLIC09 Workshop, CERN, Geneva, Switzerland (10/2009)