CURRICULUM VITAE

Herbert K. Dreiner

ADDRESS: Physikalisches Institut
Universität Bonn
Nußallee 12
D-53115 Bonn, Germany
Tel: +49 (0)228 -73 3822
Fax: +49 (0)228-73 3223
E-mail: dreiner@th.physik.uni-bonn.de

BIRTH DATE: Nov. 4, 1962 **PLACE OF BIRTH:** Pittsfield, MA; USA

CITIZENSHIP: USA, GERMANY **FAMILY:** Married,
one daughter (*30.8.97),
one son (*11.4.2000).

EDUCATION AND EMPLOYMENT:

1968–1972	Primary Education in Williamstown, MA, USA.
1972–1981	Secondary Education in Aachen, Germany.
1981–1983	Vordiplom, plus two semesters, Universität Bonn, Germany.
1984–1989	Ph.D. degree in Theoretical Particle Physics at the University of Wisconsin–Madison under the supervision of D.V. Nanopoulos.
Dec. 1985	MS Physics.
1987, 1988	Summer Research Student at CERN.
1989–1990	Postdoctoral Associate, Theory Group, DESY, Hamburg.
1990–1993	Postdoctoral Associate, Theoretical Physics, University of Oxford.
1993–1995	Postdoctoral Associate, Theoretical Physics, ETH-Zürich.
1996–2000	Rutherford Laboratory, Senior Scientific officer (equivalent to university reader).
2000–	Physics Professor, University of Bonn, Germany

AWARDS:

1982–1986	Fellowship from Studien Stiftung des Deutschen Volkes (National German Scholarship Organization)
Aug. 1987	Scholarship for the Physics Summer School at Cargese, France.
1988–1989	University of Wisconsin Dean's Fellowship.
1991–1993	Elected member of Wolfson College, Oxford.
1998–2000	Successful application for Athanasios Dedes to hold a Marie-Curie Fellowship at the Rutherford Laboratory.
2001–2002	Successful application for Gregory Moreau to hold a Humboldt Postdoctoral Fellowship at the University of Bonn under my guidance.

EARLY TEACHING EXPERIENCE:

1984 – 1986	Teaching assistant for first year undergraduate physics students. Problem solving sessions and laboratory classes.
1987 – 1989	Grader of graduate level theoretical physics courses. Field theory and quantum mechanics.
1991 – 1994	Guiding doctoral students in research (S. Lola, J. Butterworth, and P. Morawitz).
1996 – 1999	Tutor at University College, Oxford. Teaching 3$^{\text{rd}}$ year undergraduates.
1997 – 2000	Ph.D. advisor to Peter Richardson, (together with Mike Seymour).
June, 1996	Invited member of E. Perez's (Paris, H1 experiment) thesis defense committee.
Dec., 1999	Invited member of C. Hugonie's (Paris) thesis defense committee.
April, 2001	Invited member of G. Moreau's (Paris) thesis defense committee.

Ph.D. STUDENTS:

1990 – 1992	**Jon Butterworth** (Oxford), supervised theory and analysis part of thesis. Experimental advisor: Neville Harnew. Topic: *Searches for Supersymmetry with Broken R-parity at HERA via Resonance Production.*
1992 – 1994	**Peter Morawitz** (Oxford), supervised theory and analysis part of thesis in Oxford. Experimental advisor: Neville Harnew. Topic: *Searches for Supersymmetry with Broken R-parity at HERA via Associated Production.*
1997 – 2000	**Peter Richardson**(Oxford), jointly supervised with Michael Seymour. Topic: *Simulations of R-Parity Violating SUSY Models.*
1999 – 2002	**Marc Thormeier** (Oxford/Bonn). Topic: *Confronting Froggatt-Nielsen Models for Fermion Masses with Supersymmetry with broken R-Parity.*
2002 – 2006	**Christoph Luhn** (Bonn). Topic: *Supersymmetry Model Building: Investigating Discrete Gauge Symmetries and their Applications for the Fermion Mass Problem*
2006 –	**Sebastian Grab** (Bonn). Topic: *NLO QCD Corrections to R-Parity Violating Supersymmetric Production and Decays and the Extraction of the Fundamental Supersymmetric Parameters at the LHC*
2006 –	**Bransilav Poletanovic** (Bonn). Topic: *Axion and Axino Relic Density in R-Parity Violating Supersymmetry*

DIPLOM STUDENTS:

11/2000 – 11/2001	**Pascal Vaudrevange**, *Derivation of Feynman Rules for Two-component Fermions in Supersymmetry.*
4/2001 – 4/2002	**Christoph Luhn**, *Neutrino Masses in R-parity Violation with Complex Yukawa Couplings.*
4/2001 – 4/2002	**Ulrich Langenfeld**, *Lower Bound on the Lightest Neutralino Mass from Supernova 1987a*
11/2001 – 11/2002	**Margarete Herz**, *Bounds on R-parity Violating Couplings from Meson Decays.*
6/2003 – 7/2004	**Markus Bernhardt**, $H \to WW \to \ell\ell\nu\nu$ *as a Higgs Search Mode at the LHC*
7/2003 – 7/2004	**Jong Soo Kim**, *A Simple model for Neutrino Masses in R-parity Violating Supersymmetry*

1/2005 – 1/2006	**Branislav Poletanovic**, *Axino Dark Matter in R-Parity Violating Supersymmetry*
1/2005 – 1/2006	**Sebastian Grab**, *Next-to-Leading Order Corrections to Resonant Slepton Production at Hadron Colliders*

LECTURE COURSES:

Spring 1999	*Supersymmetry for Experimentalists*, 8 part graduate lecture course, Oxford University.
WS 2000/01	*Theoretical Elementary Particle Physics* (Halzen & Martin), Bonn University. 16-week lecture course, 3 *hrs* per week.
SS 2001	*Experimental and Theoretical Aspects of Neutrino Physics*, Bonn University. 14-week lecture course, 2 *hrs* per week.
WS 2001/02	*Theoretical Physics I* [classical mechanics (Goldstein), electro- and magnetostatics (Jackson)], Bonn University. 16-week lecture course, 4 *hrs* per week.
SS 2002	*Electrodynamics* (Jackson), Bonn University. 14-week lecture course, 4 *hrs* per week.
SS 2002	*Supersymmetry for Experimentalists*, Bonn University. Six part graduate lecture course for experimentalists working at LEP, Tevatron, HERA and LHC.
WS 2002/03	*Theoretical Elementary Particle Physics* (Halzen & Martin), Bonn University. 16-week lecture course, 3 *hrs* per week.
WS 2002/03	*Cosmology and Astroparticle Physics*, Bonn University. Seminar, talks held by students.
SS 2003	*Neutrino Physics*, Bonn University; together with Prof. Weinheimer. 14-week lecture course, 3 *hrs* per week, plus 2 *hrs* per week problems class.
WS 2003/04	*Collider Physics* (Barger and Phillips), Bonn University; 16-week lecture course, 3 *hrs* per week, plus 2 *hrs* per week problems class.
SS 2004	*Quantum Field Theory*, Bonn University; 14-week lecture course, 3 *hrs* per week, plus 2 *hrs* per week problems class.
WS 2004/05	*Quantum Field Theory II* (Peskin & Schröder), Bonn University; 16-week lecture course, 4 *hrs* per week, plus 2 *hrs* per week problems class.
SS 2005	*Astroparticle Physics and Cosmology*, Bonn University; 14-week lecture course, 3 *hrs* per week, plus 2 *hrs* per week problems class.
WS 2005/06	*Classical Mechanics and Electrostatics* (Kuypers, Jackson), Bonn University; 16-week lecture course, 4 *hrs* per week, plus 3 *hrs* per week problems class.

SUMMER SCHOOLS:

March 1996	6 part lecture course on *Supersymmetry for Experimentalists*; held at the University of Edinburgh
March 1996	6 part lecture course on *Supersymmetry for Experimentalists*; held at the University of Glasgow.
June 1997	6 part lecture course on *Supersymmetry for Experimentalists*; held at the University of Manchester.
Aug. 1998	2 lectures on supersymmetry held at Swiss Summer School in Zuoz, Engadin.

Sept. 1998,	6 lectures entitled: *An Introduction to Supersymmetry for Theorists*, held at BUSSTEPP (British Universities Summer School on Theoretical Elementary Particle Physics).
Sept. 1999	6 lectures entitled: *An Introduction to Supersymmetry for Theorists*, held at BUSSTEPP-99. Voted best lecturer by students.
March 2002	Six part, blackboard lecture course, *Introduction to Supersymmetry*, at Dutch national graduate symposium held at NIKHEF.
Sept. 2002	Four part, black board lecture course on "Introduction to Supersymmetry" at the German Autumn School: Maria Laach.
Feb. 2003	3 part black board lecture course on "Introduction to Supersymmetry" at Schladming, Austria.
Oct. 2004	4 part black board lecture course on "Introduction to Supersymmetry" for astroparticle physicists at Obertrubach, Germany.
Feb. 2006	Lecture course on "Introduction to Supersymmetry" for hadron- and astroparticle physicists at Tübingen, Germany.

PUBLIC UNDERSTANDING OF SCIENCE:

Fall, 1992	Popular 10 part particle physics class in the Department of Continuing Education, University of Oxford (similar to German Volkshochschule).
Dec. 1999	Lecture on elementary particle physics as part of a full day master class for highschool students at the Rutherford Laboratory.
Dec. 2001	Popular lecture on neutrino physics for 200 alumni of Bonn University.
June 2002	Lecture to high school students on physics dept. open-day at Bonn University.
July 2002	Popular lecture on neutrino physics at *Dies Academicus*, an open day of public lectures held each semester at Bonn University.
Oct. 2002	5 day intensive course at Bonn University: *Introduction to Quantum Mechanics*, for seven highly gifted, last year high school students from all over Germany. Organised and taught together with four theory graduate students from Bonn.
Nov. 2002	Two 2-hour physics shows for 12-14 year old high school students; organised and performed together with 17 third year physics students. Attracted audience of 650 people per show.
March 2003	Repeat of show on four consecutive days. Two days for schools and two days for general audience. Restricted to 550 people per show.
Oct. 2003	New show with an entirely new set of students. 3 performances in Oct and 3 in March 2004.
June 2004	Public Science presentation at *Wissenschaftsnacht* (Science night of Bonn University).
June 2005	Kinderuni lecture together with Physics Show Students. Topic: "Was ist ein Atom?"
Oct. 2004	New Physics show with again new set of 3rd year students. 3 performances in Oct and 3 in March 2005.
Oct. 2005	New Physics show with again new set of 3rd year students. 3 performances in Oct and 3 in Feb. 2006.
Nov. 2005	2 public lectures entitled "Albert Einstein, 1905, a Three Course menu" at the Deutsche Museum, Bonn.
Dec. 2005	Joint performance with drama group c.t.201 on "Werner Heisenberg, Leben und Werk"

March 2006 Repeat of the talk on Einstein, 1905 for 500 school children at Bonn University.

March 2006 New Physics show performed at the Deutsche Museum, München with 18 students and one technician, 3 performances, 2 for school children, one evening show with admission charge. All "sold" out.

TALKS IN SCHOOLS:

Dec. 2002 Talk on neutrinos to Physik Leistungskurs (12^{th} grade) at Nonnenwerth.

CONFERENCES ORGANIZED:

Dec. 1996 Co-organizer, together with R.G. Roberts, of annual British Theory Christmas meeting. The conference has 200, mainly British-based participants and lasts 3 days. It consists of 9 or 10 invited hour-long plenary talks, held by international speakers.

Dec. 1997 Together with R.G. Roberts organizer of annual British Theory Christmas meeting.

June 1998 Main organizer for SUSY-98, held in Oxford. Co-organizer: Graham Ross. The conference had 170 international participants and ran for 6 days. Over 120 talks were given in parallel and plenary sessions.

Dec. 1998 Together with R.G. Roberts organizer of annual British Theory Christmas meeting.

May, 1999 Co-organizer of 3 day meeting on Neutrino Physics together with Subir Sarkar. The meeting was attended by 35 experimentalists from around the world and 15 theorists. It was held in Cosener's House, Abingdon.

Dec. 1999 Together with R.G. Roberts organizer of annual British Theory Christmas meeting.

Dec. 2000 Together with R.G. Roberts organizer of annual British Theory Christmas meeting.

May. 2004 Together with H.-P. Nilles organizer of Planck-04, annual international conference on supersymmetry model building.

Oct, 2004 Initiated and organised the meeting NRW-Pheno in Bad Honnef, joint regional meeting of high-energy experimentalists and theorists.

Aug, 2005 Together with Manuel Drees and H.-P. Nilles organizer of COSMO-05, annual international conference on cosmology and particle physics.

WORKSHOPS:

1990 LHC Workshop, member of Supersymmetry Working Group. Parallel session talk at final meeting in Aachen. Published contribution on searches for supersymmetry with R-parity violation.

1991 Second HERA workshop. Member of the Beyond the Standard Model group. First publication on resonant squark production at HERA via R-parity violation together with Jon Butterworth (ZEUS).

1991 EE500 Workshop at Annecy, member of Supersymmetry Working Group. Plenary talk on *Resonant Sneutrino Production*. Results published in proceedings.

1992 Tau-Physics Workshop, Columbus, Ohio. Plenary talk on tests of Bell's inequality at LEP via tau lepton decays together with Michael Dittmar. Results published in proceedings.

1994 One month at Aspen Summer Institute on *Searches for Physics Beyond the Standard Model*. Talk on Neutrino Masses and Gauge Symmetries.

1995 Two months at ITP Santa Barbara, *From the Weak Scale to the Planck Scale* Workshop. Talk on *Anomaly-free Gauged R-Symmetries*.

1996 Third HERA Workshop; Convener of the Beyond the Standard Model group. Plenary talk at final meeting to summarize the group's results. Editor of the group's proceedings write-up. Systematic analysis of R-parity violating decays of resonantly produced squarks. Results published in proceedings.

1997 Oxford LEP2 Workshop; Convener of the Beyond the SM group. Two plenary talks to present group results. Analysis of non-resonant single sparticle production at LEP. Results published in proceedings.

1998 Tevatron Run II Supersymmetry/Higgs Workshop; Convener of the Beyond the MSSM working group. Two plenary talks to present group results. Editor of the final report. Simulation of resonant slepton production. Results published in proceedings.

1999 Les Houches Collider Physics Workshop, Convener of the Supersymmetry group.

2001-03 ECFA/DESY Workshop on the Next Linear Collider. Convenor for supersymmetry group.

2006- Together with M. Krämer (Aachen) theory convenor of the "beyond the standard model" group of the LHC-D workshop, which meets for the first time April, 2006. It will continue to meet through the early days of the LHC.

COLLABORATIONS WITH EXPERIMENTALISTS:

1990 Collaboration with Felicitas Pauss (CMS, L3) on *LHC searches for Supersymmetry with Broken R-Parity*. Published in the Aachen LHC-Workshop proceedings.

1991 Collaboration with Jon Butterworth (ZEUS) on *Resonant Squark Production at HERA* within the Second HERA Workshop. Results published in the HERA Workshop proceedings and in Nuclear Physics B.

1992 Collaboration with Michael Dittmar (then OPAL, now L3 and CMS) on *A test of Bell's inequality via correlated tau lepton decays at LEP1*. Results published in Physics Letters B.

1993 Collaboration with Grahame Blair and Peter Morawitz (then both ZEUS) on a *Monte Carlo Generator for Supersymmetry at HERA*. Documentation published as a ZEUS preprint.

1994 Collaboration with Peter Morawitz (then ZEUS, now ALEPH) on *Supersymmetry Searches at HERA*. Results published in Nuclear Physics B.

1996 Collaboration with Peter Morawitz (ALEPH) on a possible supersymmetric explanation of the ALEPH 4-jet events. Results published in Physics Letters B.

1996 Collaboration with Michael Dittmar (CMS, L3) on a new signature for the Standard Model Higgs search: $H \to W^+W^- \to \ell^+\nu_\ell\ell^-\bar{\nu}_\ell$. Results published in Physical Review D and Ringberg Workshop.

1996 Collaboration with Emmanuelle Perez and Yves Sirois (both H1) on a systematic study of resonant squark production at HERA followed by supersymmetric gauge decays. Published in the third HERA Workshop proceedings.

1997 Collaboration with Peter Morawitz (ALEPH) on a supersymmetric explanation of the high-Q^2 excess at HERA. Results published in Nuclear Physics B.

1997 Collaboration with Peter Morawitz and Matt Williams (both ALEPH) on single supersymmetric particle production at LEP. Results published in Physics Letters B.

1999 Collaboration with Max Chertok (CDF) and Greg Landsberg (D0) to produce final report for the Tevatron Run II Higgs/Supersymmetry workshop.

2001 Collaboration with Giacomo Polesello (NOMAD, ATLAS) on obtaining bounds on supersymmetry with broken R-parity from meson decays.

2002 Collaboration with Giacomo Polesello (NOMAD, ATLAS) on obtaining bounds on supersymmetry with broken R-parity from NOMAD data.