

# Stefan Scherer

Address:	Institut für Kernphysik Johannes Gutenberg-Universität J. J. Becher-Weg 45 55099 Mainz Germany
Phone:	+49 6131 3923289
Fax:	+49 6131 3925474
E-Mail:	<a href="mailto:scherer@kph.uni-mainz.de">scherer@kph.uni-mainz.de</a>
Date of Birth:	March 29, 1961
Place of Birth:	Pirmasens, Germany
Citizenship:	German

## Curriculum vitae

### Professional Experience

Since May 2007	Senior academic councillor (Akademischer Oberrat)
May 2005 - April 2007	Academic councillor (Akademischer Rat)
February 2005 - May 2005	Scientific employee
Since January 2004	Extraordinary professor of physics (Apl. Professor)
February 1999 – February 2005	Lecturer (C2-Hochschuldozent)
March 1996 – February 1999	Scientific employee
October 1994 – March 1996	Habilitation grant of German Research Foundation
September 1992 – August 1994	Research associate, TRIUMF, Vancouver
September 1990 – August 1992	Postdoctoral position at NIKHEF–K, Amsterdam

### Educational History

October 1996	Habilitation, Johannes Gutenberg-Universität, Mainz
July 1990	Dr. rer. nat., Johannes Gutenberg–Universität,

	Mainz
March 1987	Physik–Diplom, Mainz
June 1985	B. S. Physics, University of Washington, Seattle
1984 – 1985	Stipend of German Academic Exchange Service, University of Washington, Seattle
October 1983	Diplom–Vorprüfung Physik, Mainz
July 1980 – November 1981	Alternative service (conscientious objector)
1971 – 1980	Willigis Gymnasium, Mainz

### Teaching

- Winter 2007: Chiral Dynamics I;  
Selected Topics in Group Theory (Seminar)
- Summer 2007: Group Theory in Physics II
- Winter 2006: Group Theory in Physics I
- Summer 2006: Effective Field Theory II;  
Special Topics in Group Theory
- Winter 2005: Effective Field Theory I;  
Special Problems in Quantum Mechanics (Seminar)
- Summer 2005: Group Theory in Physics II;  
Selected Topics in Quantum Mechanics and Field Theory (Seminar)
- Winter 2005: Group Theory in Physics I;  
Special Problems in Quantum Mechanics (Seminar)
- Summer 2004: Chiral Dynamics II
- Winter 2003: Chiral Dynamics I;  
Special Problems in Quantum Mechanics (Seminar)
- Summer 2003: Group Theory in Physics II
- Winter 2002: Group Theory in Physics I;  
Special Problems in Quantum Mechanics (Seminar)
- Summer 2002: Introduction to Chiral Dynamics
- Winter 2001: Pionoelectroproduction at MAMI;  
Special Problems in Quantum Mechanics (Seminar);  
Real and Virtual Compton Scattering (Seminar)
- Summer 2001: Group Theory in Physics II

- Winter 2000: Group Theory in Physics I
- Winter 1999: Introduction to Chiral Perturbation Theory;  
Special Problems in Quantum Mechanics (Seminar)
- Summer 1999: Group Theory in Physics
- Winter 1998: Special Problems in Quantum Mechanics (Seminar)
- Summer 1998: Group Theory in Particle Physics
- Winter 1997: Special Problems in Quantum Mechanics (Seminar)
- Summer 1997: Chiral Perturbation Theory for Baryons
- Winter 1996: Chiral Perturbation Theory for Mesons
- Summer 1995: Chiral Symmetry and Models of the Nucleon

#### Lecture Notes

- A Chiral Perturbation Theory Primer
- Chiral Dynamics I
- Chiral Dynamics II
- Chiral Perturbation Theory for Baryons
- Effective Field Theory I
- Effective Field Theory II
- Group Theory in Particle Physics
- Group Theory in Physics I
- Group Theory in Physics II
- Introduction to Chiral Dynamics
- Introduction to Chiral Perturbation Theory
- Real and Virtual Compton Scattering

#### Professional Service Activities

- PhD Thesis Advisor
  - Dr. G. Knöchlein (finished July 1997)
  - Dr. C. Unkmeir (finished January 2001)
  - Dr. T. Ebertshäuser (finished January 2002)

- Dr. T. Fuchs (finished January 2003)
- Mr. B. C. Lehnhart (finished July 2007)
- Mr. M. R. Schindler (finished July 2007)
- Mr. D. Djukanovic
- Mr. C. Hacker
- Diplom Thesis Advisor
  - Mr. T. Fuchs (finished November 1999)
  - Mr. B. C. Lehnhart (finished September 2003)
  - Mr. M. R. Schindler (finished April 2004)
  - Mr. D. Djukanovic (finished January 2005)
  - Mr. C. Hacker (finished June 2005)
  - Mr. A. Keller
  - Mr. S. Rix (finished July 2007)
  - Mrs. N. Wies (finished September 2005)
- Second Referee (Johannes Gutenberg-Universität, Mainz)
  - Dr. G. Knöchlein (PhD)
  - Dr. P. Post (PhD)
  - Mr. T. Ebertshäuser (M. Sc. thesis)
  - Dr. A. Frink (PhD)
  - Dr. R. Kreckel (PhD)
  - Dr. A. Salam (PhD)
  - Mrs. D. Kubistin (M. Sc. thesis)
  - Dr. M. Rogal (PhD)
  - Dr. R. Schiopu (PhD)
- External Examiner
  - Dr. J. Gegelia (PhD, Flinders University, Adelaide, Australia)
- Referee for Eur. Phys. J. A, J. Phys. A and G, Nucl. Phys. A, Phys. Lett. B, Prog. Part. Nucl. Phys., Phys. Rev. C and D, Phys. Rev. Lett., (Z. Phys. A)
- Organizer of the Seminar at the Institute of Nuclear Physics (Fall 2000 - Fall 2005)
- Member of the Steering Committee of the Institute of Nuclear Physics (since July 2000)
- Co-Spokesperson of the H1 project of the Collaborative Research Centre 443 of the German Research Foundation

- Member of the Managing Committee of the Collaborative Research Centre 443 of the German Research Foundation (since March 2005)
- Member of Graduate College *Gauge theories - experimental tests and theoretical foundations*

### Grants and Awards

- *Excellence in Teaching* Award of the State Rhineland Palatinate (Lehrpreis des Landes Rheinland-Pfalz, 2006)
- DFG collaborative research center 443, subproject H1 (January 2005 - December 2007)
- German Research Foundation (DFG): Research grant (SCHE 459/2-1) (August 2004 - July 2005)
- *Excellence in Teaching* Award of the Senate of the Johannes Gutenberg-Universität (Lehrpreis 2003)
- NATO Collaborative Research Grant (together with Prof. J. H. Koch and Prof. H. W. Fearing) (May 1995 - April 1998)
- German Research Foundation (DFG): Habilitation grant (October 1994 - February 1996)
- German Academic Exchange Service (DAAD): Stipend of the DAAD for study at the University of Washington, Seattle (September 1984 - May 1985)

### Research Visits

- 24 September 2006 - 4 October 2006, University of Pavia, Italy
- 1 March 2006 - 27 March 2006, TRIUMF, Vancouver, Canada
- 4 March 2003 - 4 April 2003, TRIUMF, Vancouver, Canada
- 19 June 2000 - 23 June 2000, NIKHEF, Amsterdam, The Netherlands
- 14 September 1999 - 14 October 1999, TRIUMF, Vancouver, Canada
- 11 February 1998 - 10 March 1998, TRIUMF, Vancouver, Canada
- 20 May 1997 - 23 May 1997, NIKHEF, Amsterdam, The Netherlands
- 17 February 1997 - 14 March 1997, TRIUMF, Vancouver, Canada
- 22 February 1996 - 21 March 1996, TRIUMF, Vancouver, Canada

### Invited Talks and Lectures

- *Recent developments in effective field theory* , International School of Nuclear Physics, Quarks in Hadrons and Nuclei, Erice, Sicily, Italy, 16 - 24 September 2007

- *Recent progress in effective field theory* , EFB 20, Pisa, Italy, 10 - 14 September 2007
- *From the chiral to the physical limit, from off-shell to on-shell kinematics* , BRAG Meeting, Bonn, Germany, 4 September 2007
- *Introduction to  $SU(3)$  chiral perturbation theory*, Crystal-Ball Meeting, Mainz, Germany, 9 - 11 July 2007
- *Introduction to chiral perturbation theory*, University Pavia, Pavia, Italy, 2 - 4 October 2006
- *Chiral perturbation theory: Success and challenge*, Symposium 20 Years of Physics with the Mainz Microtron MAMI, Mainz, Germany, 20 - 22 October 2005
- *Baryon chiral perturbation theory in manifestly Lorentz-invariant form*, 17th Indian-Summer School *Effective Field Theories* , Rez/Prague, Czech Republic, 9 - 13 September 2005
- *Renormalization and power counting in manifestly Lorentz-invariant chiral perturbation theory*, International Conference on QCD and Hadronic Physics, Beijing, China, 16 - 20 June 2005
- *Chiral perturbation theory*, ECT\* Doctoral Training Programme 2005 (Marie Curie Training Site) *Hadronic Physics*, Trento, Italy, 2 - 6 May 2005
- *Recent progress in effective field theory* , DPG Spring Meeting, Berlin, Germany, 4 - 9 March 2005
- *Compton scattering and generalized polarizabilities*, 19th European Few-Body Conference, Groningen, The Netherlands, 23 - 27 August 2004
- *Hadron structure in relativistic baryon chiral perturbation theory*, International Workshop XXXII on “Gross Properties of Nuclei and Nuclear Excitations, Probing Nuclei and Nucleons with Electrons and Photons,” Hirschegg, Kleinwalsertal, Austria, 11 - 17 January 2004.
- *Renormalization and power counting in relativistic baryon chiral perturbation theory*, Chiral Dynamics 2003, Bonn, Germany, 8 - 13 September 2003
- *Introduction to Goldstone boson interactions and decays*, Lectures at the 20th Students’ Workshop on Electromagnetic Interactions, Bosen, Germany, 31 August - 5 September 2003
- *Structure of hadrons in relativistic chiral perturbation theory*, Fourth International Conference on Perspectives in Hadronic Physics, Trieste, Italy, 12 - 16 May 2003
- *Compton scattering and polarizabilities*, Gordon Research Conference Photonnuclear Reactions, Tilton, NH, USA, 18 - 23 August 2002

- *Compton scattering o the nucleon at MAMI energies* , DPG Spring Meeting, Münster, Germany, 11 - 15 March 2002
- *Virtual Compton scattering and generalized dipole polarizabilities*, Workshop Hadrons and Nuclei, Pommersfelden, Germany, 24 - 28 September 2001
- *Real and virtual Compton scattering*, Lectures at the 18th Students' Workshop on Electromagnetic Interactions, Bosen, Germany, 2 - 7 September 2001
- *Generalized dipole polarizabilities and the spatial structure of hadrons*, Collaboration Meeting on "Real and Virtual Compton scattering off the Nucleon," Trento, Italy, 19 - 24 April 2001
- *Generalized polarizabilities in a constituent quark model*, NSTAR 2001, Mainz, Germany, 7 - 10 March 2001
- *Low-energy virtual Compton scattering o the nucleon and generalized electromagnetic polarizabilities*, Third Chinese-German Symposium on Medium Energy Physics: The Structure of the Nucleon from Chiral Perturbation Theory to QCD Sum Rules, Taipei, Taiwan, 3 - 4 March 2000
- *Generalized dipole polarizabilities of the pion*, Second International Conference on Perspectives in Hadronic Physics, Trieste, Italy, 10 - 14 May 1999
- *NN bremsstrahlung and Compton scattering—examples of the impossibility of measuring o-shell eects* , Workshop "Electromagnetic Radiation off Colliding Hadron Systems: Dileptons and Bremsstrahlung," Dresden, Germany, 16 - 17 April 1999
- *Real and virtual Compton scattering at low energies*, Lectures at the 11th Indian Summer School on Intermediate Energy Physics "Mesons and Light Nuclei," Prague, Czech Republic, 7 - 11 September 1998
- *Virtual Compton scattering—generalized polarizabilities of nucleons and pions*, Joint ECT\*/JLAB Workshop on  $N^*$  Physics and Nonperturbative Quantum Chromodynamics, Trento, Italy, 18 - 29 May 1998
- *Virtual Compton scattering o the proton and generalized polarizabilities* , DPG Spring Meeting, Bochum, Germany, 16 - 20 March 1998
- *Virtual Compton scattering o the nucleon at low energies* , International Workshop on Photons as Probes of the Reaction Dynamics of Simple Systems: N-N and p-A Bremsstrahlung, Trento, Italy, 6 - 10 October 1997
- *Chiral dynamics of rare eta decays and virtual Compton scattering o the nucleon* , First Workshop on Hadron Dynamics with the New DAΦNE and CEBAF Facilities, Frascati, Italy, 11 - 14 November 1996
- *Extension of the chiral perturbation theory meson lagrangian to order  $p^6$* , International Workshop on the Standard Model at Low Energies, Trento, Italy, 29 April - 10 May 1996

- *Electromagnetic polarizabilities of mesons*, 12<sup>th</sup> Students' Workshop on Electromagnetic Interactions, Bosen, Germany, 3 - 8 September 1995
- *Compton scattering from a pion and o-shell eects* , Perspectives in Nuclear Physics at Intermediate Energies, Trieste, Italy, 8 - 12 May 1995
- *Pionproduction at threshold*, Seventh Amsterdam Mini-Conference on "Electromagnetic production of mesons on nucleons and nuclei," Amsterdam, The Netherlands, 12 - 13 December 1991
- *Neutral pion production at threshold and low-energy theorems*, International School of Nuclear Physics, Erice, Italy, 16 - 25 July 1989

#### Inauguration lecture (Antrittsvorlesung)

- *Symmetry in physics and arts*, Mainz, Germany, December 13, 1996

#### Contributed talks

- *The structure of the nucleon in relativistic baryon chiral perturbation theory*, DPG Spring Meeting, Cologne, Germany, March 2004
- *Generalized dipole polarizabilities and the spatial structure of hadrons*, DPG Spring Meeting, Erlangen, Germany, March 2001
- *A simple model illustrating the impossibility of measuring o-shell eects* , Few-Body Problems in Physics, Taipei, Taiwan, March 2000
- *Virtual Compton scattering o a spin-0 particle* , DPG Spring Meeting, Freiburg, Germany, March 1999
- *O-shell eects in nucleon-nucleon bremsstrahlung and Compton scattering* , DPG Spring Meeting, Bochum, Germany, March 1998
- *Radiative and non-radiative muon capture on the proton in heavy baryon chiral perturbation theory*, DPG Spring Meeting, Bochum, Germany, March 1998
- *Virtual Compton scattering in chiral perturbation theory*, Chiral Dynamics: Theory and Experiment, Mainz, Germany, September 1997
- *Generalized polarizabilities and the chiral structure of the nucleon*, Few-Body Problems in Physics, Groningen, The Netherlands, July 1997
- *The rare decay  $\eta \rightarrow \pi\pi\gamma\gamma$  in chiral perturbation theory*, DPG Spring Meeting, Stuttgart, Germany, March 1996
- *Virtual Compton scattering o the pion* , DPG Spring Meeting, Stuttgart, Germany, March 1996
- *Virtual Compton scattering o the nucleon at low energies* , DPG Spring Meeting, Stuttgart, Germany, March 1996

- *Extension of the chiral perturbation theory meson lagrangian to order  $p^6$* , DPG Spring Meeting, Köln, Germany, March 1995
- *Compton scattering from a pion: O-shell eects and the equivalence theorem* , Few-Body Problems in Physics, Williamsburg, VA, May 1994
- *The o-shell electromagnetic form factors of pions and kaons in chiral perturbation theory* , Few-Body Problems in Physics, Williamsburg, VA, May 1994
- *Pion electroproduction at threshold and PCAC*, 8<sup>th</sup> Students' Workshop on Electromagnetic Interactions, Bosen, Germany, September 1991
- *Pion photoproduction at threshold in the Skyrme model*, 7<sup>th</sup> Students' Workshop on Electromagnetic Interactions, Bosen, Germany, September 1990
- *Photoproduction of pions at threshold in the Skyrme model*, DPG Spring Meeting, Strasbourg, France, March 1990
- *Pion photoproduction at threshold in chiral bag models*, 5<sup>th</sup> Students' Workshop on Electromagnetic Interactions, Bosen, Germany, September 1988
- *Photoproduction of pions at threshold in the cloudy-bag model*, DPG Spring Meeting, Groningen, The Netherlands, March 1987

#### External seminars

- *Recent progress in eective eld theory* , University Pavia, Pavia, Italy, 28 September 2006
- *Chiral perturbation theory: Success and challenge*, PSI Particle Theory Group Seminar, PSI, Switzerland, 8 June 2006
- *Chiral perturbation theory: Success and challenge*, TRIUMF, Vancouver, Canada, 2 March 2006
- *Eective eld theory of strongly interacting systems* , Theory Colloquium, University Mainz, Germany, 14 July 2005
- *Baryon chiral perturbation theory in manifestly Lorentz-invariant form*, Colloquium of the International Graduate College Kopenhagen-Gießen-Helsinki-Jyväskylä, Gießen, Germany, 19 May 2005
- *Eective eld theory including vector mesons* , University Trento, Italy, 10 May 2005
- *Chiral perturbation theory in manifestly Lorentz-invariant formulation*, University Bonn, Germany, 27 July 2004
- *The structure of the nucleon in relativistic chiral perturbation theory*, University of Trento, Trento, Italy, 27 November 2003
- *Virtual Compton scattering o the nucleon* , Bern, Switzerland, 27 June 2003

- *Virtual Compton scattering o the nucleon* , Seminar über aktuelle Probleme der theoretischen Kernphysik, Bonn, Germany, 17 June 2003
- *Virtual Compton scattering o the nucleon* , TRIUMF, Vancouver, Canada, 31 March 2003
- *Virtual Compton scattering o the nucleon* , GSI Theorie-Seminar, GSI, Darmstadt, Germany, 24 April 2002
- *Generalized polarizabilities and the structure of hadrons*, European Graduate School Basel-Tübingen, Basel, Switzerland, 6 July 2001
- *Generalized dipole polarizabilities and the spatial structure of hadrons*, Seminar zur Physik der starken Wechselwirkung, Technical University, Munich, Germany, 31 May 2001
- *Low-energy virtual Compton scattering o the nucleon and generalized electromagnetic polarizabilities*, KVI, Groningen, The Netherlands, 4 April 2000
- *Selected topics in chiral perturbation theory for mesons and nucleons*, CMU, Pittsburgh, PA, 23 November 1999
- *Low-energy virtual Compton scattering o the nucleon and generalized electromagnetic polarizabilities*, CMU, Pittsburgh, PA, 22 November 1999
- *Virtual Compton scattering and generalized dipole polarizabilities of the pion*, TRIUMF, Vancouver, Canada, 5 October 1999
- *Virtual Compton scattering o the nucleon at low energies* , University Bochum, Germany, 15 January 1999
- *Virtual Compton scattering o nucleons and pions* , Technical University, Darmstadt, Germany, 19 November 1998
- *Virtual Compton scattering o nucleons and pions* , University Gießen, Germany, 11 November 1998
- *Electromagnetic polarizabilities of pions and nucleons*, University Tübingen, Germany, 23 October 1998
- *Polarizabilities of pions and nucleons*, TRIUMF, Vancouver, Canada, 3 March 1998
- *Virtual Compton scattering o the nucleon at low energies* , Technical University, Munich, Germany, 21 January 1997
- *Extension of the chiral perturbation theory meson lagrangian to order  $p^6$* , NORDITA, Copenhagen, Denmark, 23 November 1994
- *O-shell electromagnetic form factors of the pion in chiral perturbation theory* , University Bochum, Germany, September 1993
- *Pion electroproduction at threshold and PCAC*, FZ Jülich, Germany, September 1993

- *O-shell electromagnetic form factors of the pion in chiral perturbation theory* , PSI, Switzerland, September 1993
- *O-shell electromagnetic form factors of the pion in chiral perturbation theory* , University Tübingen, Germany, September 1993
- *O-shell electromagnetic form factors of the pion in chiral perturbation theory* , University Regensburg, Germany, September 1993
- *Pion production at threshold*, University Regensburg, Germany, 24 January 1991
- *Pion electroproduction at threshold and PCAC*, VU, Amsterdam, The Netherlands, 7 June 1991
- *Photoproduction of pions at threshold in the Skyrme model and low-energy theorems*, NIKHEF-K, Amsterdam, The Netherlands, December 1989
- *Pionphotoproduction in the chiral bag model and low-energy theorems*, University Siegen, Germany, November 1987

#### Internal Seminars

- *Relativistic chiral perturbation theory for baryons* Mainz, Germany, 10 December 2003
- *Richtiges und gutes Zählen — Wörterbuch der chiralen Zweifelsfälle* , Mainz, Germany, 6 January 2003
- *Generalized dipole polarizabilities and the spatial structure of hadrons*, Mainz, Germany, 11 June 2001
- *Why are o-shell effects not measurable?* , Mainz, Germany, 10 January 2000
- *Electroweak form factors of the nucleon in muon capture and pion electroproduction*, Mainz, Germany, 2 February 1998
- *The nucleon  $\Sigma$  term*, Mainz, Germany, 9 June 1997
- *Chiral perturbation theory at order  $p^6$* , Mainz, Germany, 6 December 1995
- *Introduction to chiral perturbation theory*, Mainz, Germany, December 6, 1994
- *Compton scattering of the pion and o-shell form factors* , Mainz, Germany, 28 November 1994
- *Nonrelativistic corrections in low- and intermediate-energy physics*, TRIUMF, Vancouver, Canada, January 1993
- *Electromagnetic production of pions*, NIKHEF, Amsterdam, The Netherlands, 4 April 1991
- *Baryon resonances in the Skyrme model*, NIKHEF, Amsterdam, The Netherlands, January 1991

- *Pion photoproduction at threshold in the Skyrme model and low-energy theorems*, Mainz, Germany, 7 July 1990
- *Polarized electrons in pion electroproduction*, Mainz, Germany February 1989