

# Basil Schneider

## contact

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## languages

German (native)  
English (fluent)  
French (moderate)  
Croatian (beginner)  
Norwegian (beginner)

## computing

Linux  
C++, Python, Rust  
Root, RooFit, RooStats  
bash, sed, awk  
git, svn  
HTML, CSS  
L<sup>A</sup>T<sub>E</sub>X

## besides physics

Cycling  
Hiking  
Music

## education & employment

- Nov '15 - now **Research Associate** at the **CMS experiment** FNAL  
Mainly involved in Phase-2 tracker upgrade (Outer Tracker) and SUSY searches
- Nov '14 - Oct '15 **Postdoctoral Fellow** at the **ATLAS experiment** TRIUMF  
Mainly involved in Phase-2 tracker upgrade (ITk) and SUSY searches
- Jan '11 - Jul '14 **Ph.D.** at the **ATLAS experiment** University of Bern  
Ph.D. Thesis: A general approach to search for supersymmetry at the LHC by combining signal enhanced kinematic regions using the ATLAS detector (Supervisor: Prof. A. Ereditato)
- Sep '08 - Mar '10 **Master** of Science in **Theoretical Physics** ETH Zurich  
Master Thesis: The partition function of meromorphic conformal field theories at higher genus (Supervisor: Prof. M. Gaberdiel)
- Oct '04 - Sep '08 **Bachelor** of Science in **Experimental Physics** ETH Zurich  
Bachelor Thesis: Untersuchung der Cluster-Struktur von Elastomerpartikeln durch Simulation des Aggregationsvorganges und Partikelgrößen mittels dynamic light scattering (Supervisor: Dr. Cornelius Gauer)
- Sep '04 **Comprehensive entrance exam** ETH Zurich  
Exam at the level of a Matura

## conferences

Oct '17	<b>IEEE Nuclear Science Symposium and Medical Imaging Conference</b> Poster: "A new DAQ solution: <i>otsdaq</i> "
Aug '17	<b>Meeting of the Division of Particles and Fields of the American Physical Society</b> Speaker: "Searches for electroweakly produced supersymmetry with CMS"
Jul '17	<b>CMS Phase-2 Outer Tracker Workshop</b> Speaker: "A flexible and scalable DAQ system for CMS: <i>otsdaq</i> " Leading hands-on session: " <i>otsdaq</i> "
May '17	<b>Phenomenology 2017 Symposium</b> Speaker: "Searches for supersymmetry in single or opposite-charged dilepton final states with CMS"
Apr '17	<b>CMS SUSY Workshop</b> Speaker: "Reinterpreting the soft opposite sign lepton search in a higgsino pMSSM"
Jun '16	<b>49th Annual Fermilab Users Meeting</b> Poster: "Characterization of the pixel ASIC with a laser beam in the Outer Tracker upgrade of the CMS detector"
Jun '15	<b>USATLAS Workshop at University of Illinois at Urbana-Champaign</b> Invited speaker for plenary session: "Supersymmetry in Run-2"
May '15	<b>Mitchell Workshop on Collider and Dark Matter Physics</b> Speaker: "Supersymmetry searches in ATLAS"
May '13	<b>1<sup>st</sup> LHC Physics Conference, Barcelona, Spain</b> Poster: "Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in 21 fb <sup>-1</sup> of pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector"
Jun '12	<b>Swiss Physical Society</b> Speaker: "New Optical receiver modules for the insertable B-Layer at the ATLAS project"
Jun '11	<b>Physics at LHC, Perugia, Italy</b> Poster: "SUSY Searches at ATLAS in Multilepton Final States with Jets and Missing Transverse Energy"
Jun '11	<b>Swiss Physical Society</b> Speaker: "Insertable b-Layer: A new layer for the ATLAS detector at CERN"

## organization

Aug '12	<b>Co-organizer of workshop: SUSY Statistical Interpretations workshop</b> Wrap up lessons learned in previous round of publications and spot possible improvements for next round
Sep '11	<b>Co-organizer of outreach event: Nacht der Forschung</b> Performing experiments in public and discussing results

## **papers**

I am co-author of 475 ATLAS publications and 111 CMS publications;  
for a full list, see

<http://inspirehep.net/author/profile/B.Schneider.1>

Publications with substantial contributions from me:

Mar '18	Production and Integration of the ATLAS Insertable B-Layer arXiv:1803.00844 [physics.ins-det]
Jan '18	Search for new physics in events with two soft oppositely charged leptons and missing transverse momentum in proton-proton collisions at $\sqrt{s} = 13$ TeV arXiv:1801.01846 [hep-ex]
Sep '17	Search for supersymmetry in events with one lepton and multiple jets exploiting the angular correlation between the lepton and the missing transverse momentum in proton-proton collisions at $\sqrt{s} = 13$ TeV 10.1016/j.physletb.2018.03.028
Sep '16	Search for supersymmetry in events with one lepton and multiple jets in proton-proton collisions at $\sqrt{s} = 13$ TeV Phys. Rev. D 95, 012011 (2017)
Sep '15	Search for the electroweak production of supersymmetric particles in $\sqrt{s} = 8$ TeV pp collisions with the ATLAS detector Phys. Rev. D 93, 052002 (2016)
May '14	Search for supersymmetry in events with four or more leptons in $\sqrt{s} = 8$ TeV pp collisions with the ATLAS detector Phys. Rev. D. 90, 052001 (2014)
Feb '14	Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in $\sqrt{s} = 8$ TeV pp collisions with the ATLAS detector JHEP04(2014)169
Aug '12	Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in $\sqrt{s} = 7$ TeV pp collisions with the ATLAS detector Phys.Lett. B718 (2013) 841-859

## **public notes**

Dec '16	Search for new physics in the compressed mass spectra scenario using events with two soft opposite-sign leptons and missing transverse momentum at $\sqrt{s} = 13$ TeV	CMS PAS SUS-16-025
Aug '16	Search for supersymmetry in events with one lepton and multiple jets in proton-proton collisions at $\sqrt{s} = 13$ TeV in 2016	CMS PAS SUS-16-019
Jul '15	First look at proton proton collision data at $\sqrt{s} = 13$ TeV in preparation for a search for squarks and gluinos in events with missing transverse energy, jets, and an isolated electron or muon	ATL-PHYS-PUB-2015-029
Mar '15	Expected sensitivity studies for gluino and squark searches using the early LHC 13 TeV Run-2 dataset with the ATLAS experiment	ATL-PHYS-PUB-2015-005
Jun '14	A general approach to search for supersymmetry at the LHC by combining signal enhanced kinematic regions using the ATLAS detector (PhD thesis)	CERN-THESIS-2014-056
Mar '13	Search for supersymmetry in events with four or more leptons in $21 \text{ fb}^{-1}$ of pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector	ATLAS-CONF-2013-036
Mar '13	Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in $21 \text{ fb}^{-1}$ of pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector	ATLAS-CONF-2013-035
Nov '12	Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in $13.0 \text{ fb}^{-1}$ of pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector	ATLAS-CONF-2012-154
Nov '12	Search for Supersymmetry in events with four or more leptons in $13 \text{ fb}^{-1}$ pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector	ATLAS-CONF-2012-153

## proceedings

Jun '13	Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in $21 \text{ fb}^{-1}$ of pp collisions at $\sqrt{s} = 8$ TeV with the ATLAS detector	ATL-PHYS-PROC-2013-145
Nov '11	The ATLAS IBL BOC Demonstrator	ATL-INDET-PROC-2011-038
Oct '11	SUSY Searches at ATLAS in Multilepton Final States with Jets and Missing Transverse Energy	ATL-PHYS-PROC-2011-201

## supervision

- Jul '16 - Oct '16 **David Jin**  
Summer Student at FNAL, University of Chicago
- May '16 - Aug '16 **Christian Leefmans**  
Summer Student at FNAL, Cornell University
- Dec '14 - Nov '15 **Felix Cormier**  
MSc student at CERN, University of British Columbia
- Nov '14 - Nov '15 **Matthew Gignac**  
PhD student at CERN, University of British Columbia
- Dec '12 - Mar '14 **Benjamin Gerber**  
MSc student, University of Bern

## teaching

- Jan '11 - May '14 **Lab Course** University of Bern  
Supervising and assisting Physics undergraduate students working on fundamental experiments in mechanics and electronics
- Jan '11 - May '14 **Physics for Biologists** University of Bern  
Assisting 1<sup>st</sup> year Physics course
- Jul '11 - May '14 **Private lessons for high-school graduates** Interlink Schulberatung GmbH  
Private lessons in Mathematics, Statistics and Physics
- Jun '08 **Exam preparation** ETH Zurich  
Exam preparation for 1<sup>st</sup> year Physics and Mathematics students
- 2007/2008 **Teaching assistant** ETH Zurich  
Teaching assistant for environmental science students in Calculus

## outreach

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|-------------------|---|
| Jan '16           | <b>FNAL Open House</b><br>Explaining the purpose and the mission of Fermilab to the public  |
| Nov '13 - now     | <b>Official ATLAS underground guide</b><br>Showing the ATLAS detector to the public during LHC shutdowns  |
| Mar '12 - Mar '13 | <b>Masterclasses</b><br>Helping high school students performing measurements on real data from LHC  |
| Sep '11           | <b>Nacht der Forschung</b><br>Presenting LHC physics on a poster and answering questions of the public in a research outreach event at the University of Bern |

## awards

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|---------|--|
| Mar '15 | <b>Faculty award winner of the University of Bern</b><br>Award for the best PhD thesis in physics at the University of Bern in the year 2014 |
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