

## Researcher in **theoretical particle physics**.

**Focus:** New models beyond the Standard Model: phenomenology, cosmology, and astrophysics.  
Collider experiments (LHC&ILC); Supersymmetric models; Models with light particles.

**Proficiency:** Programming and numerical computing; Detector physics of colliders; Statistics; Languages.

**Keywords:** Muon  $g-2$  anomaly; LHC searches for non-colored SUSY particles and long-lived particles;  
Dark matter models with hidden strong interactions; Leptogenesis; Grand unification theories;  
ILC beam dump; Axion-like particles; Dark photons; ...

## CAREER

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- Feb. 2023 – *Present*    Assistant Professor at Department of Physics, National Sun Yat-sen University (NSYSU)
- Nov. 2019 – Jan. 2023    Scientific assistant at Institute of Physics, TTK, ELTE Eötvös Loránd University  
Two articles with Prof. Trócsányi and students on models with a light  $Z'$ -boson.  
Six articles on muon  $g-2$  anomaly, ILC beam dump, etc.
- Oct. 2017 – Sep. 2019    Postdoctoral fellow at Department of physics and astronomy, The University of Padova  
Two articles on cosmology and astroparticle physics.
- Oct. 2014 – Sep. 2017    Postdoctoral fellow at Faculty of Physics, Technion—Israel Institute of Technology  
Four articles with Prof. Shadmi and students on collider phenomenology etc.  
Two articles on  $g-2$  anomaly, dark matter, supersymmetry, etc.
- Apr. 2013 – Sep. 2014    JSPS postdoctoral fellow at Kavli IPMU, the University of Tokyo  
Three articles on astroparticle physics,  $g-2$  anomaly, supersymmetry, etc.
- Apr. 2010 – Mar. 2013    JSPS doctoral-course fellow at Graduate school of science, the University of Tokyo  
Seven articles with Prof. Hamaguchi on  $g-2$  anomaly, supersymmetry, etc.  
Two articles on collider phenomenology (LHC).

## Education

- Apr. 2010 – Mar. 2013    Ph.D. in Science (25 Mar. 2013)  
Graduate school of science, the University of Tokyo  
Dissertation: *Supersymmetry after the Higgs discovery and its LHC phenomenology*  
Supervisor: Prof. Koichi Hamaguchi    [[arXiv:1305.0790](https://arxiv.org/abs/1305.0790)]
- Apr. 2008 – Mar. 2010    Master of Science in Physics (24 Mar. 2010)  
Graduate school of science, the University of Tokyo  
Thesis: *Supersymmetry without R-Parity: Its Phenomenology*  
Supervisor: Prof. Koichi Hamaguchi
- Apr. 2004 – Mar. 2008    Bachelor of Science in Physics (25 Mar. 2008)  
Faculty of science, the University of Tokyo  
Extra qualification from Bioinformatics and systems biology program for undergraduate education

## SCHOLARSHIPS AND GRANTS

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- Oct. 2016 – Sep. 2017 The Lady Davis Fellowship [15.6k USD]
- Apr. 2013 – Mar. 2016 Grant-in-Aid for JSPS Research Fellows (for PostDocs) [2.76M JPY in total]  
declined in Sep. 2014
- Apr. 2010 – Mar. 2013 Grant-in-Aid for JSPS Research Fellows (for Ph. D. students) [2.10M JPY in total]

## TEACHING

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### Lecture

NSYSU, introductory undergraduate courses (in English)

- AY2022 Spring General Physics 2 (basic electromagnetism for engineers). 37 students.  
AY2023 Fall General Physics 1 (mechanics for engineers). 49 students.

### Special lectures

Intensive courses for graduate students

- 11–14 Oct. 2016 special lecture: Lecture course “Tools for BSM Physics”  
Yonsei University, South Korea
- 8–10 Feb. 2012 informal lecture: Automatic Calculation of Feynman diagrams  
Osaka University, Japan

## OTHER ACTIVITIES

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### Workshop organization

- 16–19 Jul. 2013 “Kavli IPMU School on the future of collider physics”  
at Kavli IPMU, the University of Tokyo

### Voluntary activity

- Feb. 2012 – *Present* Advisor on Numerical Simulation for Particle Physics  
<http://misho104.github.io/FeynLecture/>
- Jan. 2011 – *Present* Contributor on Open-Source Codes for Particle Physics  
<https://github.com/misho104/>

## PAPERS

A list of my publications is also available at: <https://inspirehep.net/literature?q=exactauthor:S.Iwamoto.2>

- [1] M. Endo, K. Hamaguchi, and S. Iwamoto,  
*Lepton Flavor Violation and Cosmological Constraints on R-parity Violation*,  
*JCAP* **1002** (2010) 032 [[arXiv:0912.0585](#)].
- [2] S. Asai, Y. Azuma, M. Endo, K. Hamaguchi, and S. Iwamoto,  
*Stau Kinks at the LHC*,  
*JHEP* **1112** (2011) 041 [[arXiv:1103.1881](#)].
- [3] M. Endo, K. Hamaguchi, S. Iwamoto, and N. Yokozaki,  
*Higgs Mass and Muon Anomalous Magnetic Moment in Supersymmetric Models with Vector-Like Matters*,  
*Phys. Rev. D* **84** (2011) 075017 [[arXiv:1108.3071](#)].
- [4] M. Endo and S. Iwamoto,  
*LHC Dijet Signals in New Physics Models for Top Forward–Backward Asymmetry*, [arXiv:1110.0014](#).
- [5] M. Endo, K. Hamaguchi, S. Iwamoto, and N. Yokozaki,  
*Higgs mass, muon  $g-2$ , and LHC prospects in gauge mediation models with vector-like matters*,  
*Phys. Rev. D* **85** (2012) 095012 [[arXiv:1112.5653](#)].
- [6] M. Endo, K. Hamaguchi, K. Nakayama, S. Iwamoto, and N. Yokozaki,  
*Higgs mass and muon anomalous magnetic moment in the  $U(1)$  extended MSSM*,  
*Phys. Rev. D* **85** (2012) 095006 [[arXiv:1112.6412](#)].
- [7] M. Endo, K. Hamaguchi, S. Iwamoto, and N. Yokozaki,  
*Vacuum Stability Bound on Extended GMSB Models*,  
*JHEP* **1206** (2012) 060 [[arXiv:1202.2751](#)].
- [8] M. Endo and S. Iwamoto,  
*Comment on the CMS search for charge-asymmetric production of  $W'$  boson in  $t\bar{t} + \text{jet}$  events*,  
*Phys. Lett. B* **718** (2013) 1070–1072 [[arXiv:1207.5900](#)].
- [9] M. Endo, K. Hamaguchi, K. Ishikawa, S. Iwamoto, and N. Yokozaki,  
*Gauge Mediation Models with Vectorlike Matters at the LHC*,  
*JHEP* **1301** (2013) 181 [[arXiv:1212.3935](#)].
- [10] M. Endo, K. Hamaguchi, S. Iwamoto, and T. Yoshinaga,  
*Muon  $g-2$  vs LHC in Supersymmetric Models*,  
*JHEP* **1401** (2014) 123 [[arXiv:1303.4256](#)].
- [11] M. Ibe, S. Iwamoto, S. Matsumoto, T. Moroi, and N. Yokozaki,  
*Recent Result of the AMS-02 Experiment and Decaying Gravitino Dark Matter in Gauge Mediation*,  
*JHEP* **1308** (2013) 029 [[arXiv:1304.1483](#)].
- [12] M. Endo, K. Hamaguchi, S. Iwamoto, T. Kitahara, and T. Moroi,  
*Reconstructing Supersymmetric Contribution to Muon Anomalous Magnetic Dipole Moment at ILC*,  
*Phys. Lett. B* **728** (2014) 274–281 [[arXiv:1310.4496](#)].
- [13] S. Iwamoto, T. T. Yanagida, and N. Yokozaki,  
*CP-safe Gravity Mediation and Muon  $g-2$* ,  
*PTEP* **2015** 073B01 [[arXiv:1407.4226](#)].
- ★★[14] J. L. Feng, S. Iwamoto, Y. Shadmi, and S. Tarem,  
*Long-lived sleptons at the LHC and a 100 TeV proton collider*,  
*JHEP* **1512** (2015) 166 [[arXiv:1505.02996](#)].

- [15] N. Ierushalmi, S. Iwamoto, G. Lee, V. Nepomnyashy, and Y. Shadmi,  
*LHC benchmarks from flavored gauge mediation*,  
*JHEP* **1607** (2016) 058 [[arXiv:1603.02637](#)].
- [16] S. Iwamoto, G. Lee, Y. Shadmi, and R. Ziegler,  
*Diphoton signals from colorless hidden quarkonia*,  
*Phys. Rev. D* **94** (2016) 015003 [[arXiv:1604.07776](#)].
- [17] M. Abdullah, J. L. Feng, S. Iwamoto, and B. Lillard,  
*Heavy bino dark matter and collider signals in the MSSM with vectorlike fourth-generation particles*,  
*Phys. Rev. D* **94** (2016) 095018 [[arXiv:1608.00283](#)].
- [18] S. Iwamoto, G. Lee, Y. Shadmi, and Y. Weiss,  
*Tagging new physics with charm*,  
*JHEP* **1709** (2017) 114 [[arXiv:1703.05748](#)].
- [19] M. Endo, K. Hamaguchi, S. Iwamoto, and K. Yanagi,  
*Probing minimal SUSY scenarios in the light of muon  $g-2$  and dark matter*,  
*JHEP* **1706** (2017) 031 [[arXiv:1704.05287](#)].
- ★[20] M. Geller, S. Iwamoto, G. Lee, Y. Shadmi, and O. Telem,  
*Dark quarkonium formation in the early universe*,  
*JHEP* **1806** (2018) 135 [[arXiv:1802.07720](#)].
- [21] V. Brdar, A. J. Helmboldt, S. Iwamoto, and K. Schmitz,  
*Type I seesaw mechanism as the common origin of neutrino mass, baryon asymmetry, and the electroweak scale*,  
*Phys. Rev. D* **100** (2019) 075029 [[arXiv:1905.12634](#)].
- [22] G. Azuelos, M. D’Onofrio, S. Iwamoto, and K. Wang,  
*Search for the SUSY Electroweak Sector at  $ep$  Colliders*,  
*Phys. Rev. D* **101** (2020) 095015 [[arXiv:1912.03823](#)].
- ★★[23] M. Endo, K. Hamaguchi, S. Iwamoto, and T. Kitahara,  
*Muon  $g-2$  vs LHC Run 2 in Supersymmetric Models*,  
*JHEP* **2004** (2020) 165 [[arXiv:2001.11025](#)].
- [24] M. Endo, K. Hamaguchi, S. Iwamoto, and T. Kitahara,  
*Supersymmetric Interpretation of the Muon  $g-2$  Anomaly*,  
*JHEP* **2107** (2021) 075 [[arXiv:2104.03217](#)].
- [25] S. Iwamoto, T. T. Yanagida, and N. Yokozaki,  
*Wino-Higgsino dark matter in the MSSM from the  $g-2$  anomaly*,  
*Phys. Lett. B* **823** (2021) 136768 [[arXiv:2104.03223](#)].
- ★[26] S. Iwamoto, K. Seller, and Z. Trócsányi,  
*Sterile neutrino dark matter in a  $U(1)$  extension of the Standard Model*,  
*JCAP* **2201** (2022) 035 [[arXiv:2104.11248](#)].
- [27] S. Iwamoto, T. J. Kärkkäinen, Z. Péli, and Z. Trócsányi,  
*One-loop corrections to light neutrino masses in gauged  $U(1)$  extensions of the Standard Model*,  
*Phys. Rev. D* **104** (2021) 055042 [[arXiv:2104.14571](#)].
- ★★[28] K. Asai, S. Iwamoto, Y. Sakaki, and D. Ueda,  
*New physics searches at the ILC positron and electron beam dumps*,  
*JHEP* **2109** (2021) 183 [[arXiv:2105.13768](#)].
- [29] M. Chakraborti, S. Iwamoto, J. S. Kim, R. Masefek, and K. Sakurai,  
*Supersymmetric explanation of the muon  $g-2$  anomaly with and without stable neutralino*,  
*JHEP* **2208** (2022) 124 [[arXiv:2202.12928](#)].

- [30] K. Asai, S. Iwamoto, M. Perelstein, Y. Sakaki, and D. Ueda,  
*Sub-GeV dark matter search at ILC beam dumps*,  
*JHEP* **2402** (2024) 129 [[arXiv:2301.03816](#)].

### Invited review article

- [S1] M. Endo, S. Iwamoto, and T. Kitahara,  
此のたびのミューオン異常磁気能率 (*Review of muon  $g-2$  anomaly and its new physics implications*),  
*High Energy News* **40** (2021) 56–65. (in Japanese)

### Dissertation

- [A1] S. Iwamoto,  
*Supersymmetry after the Higgs discovery and its LHC phenomenology*, [arXiv:1305.0790](#).

### In proceedings

- [P1] S. Iwamoto,  
*Muon  $g-2$  anomaly and 125 GeV Higgs : Extra vector-like quark and LHC prospects*,  
*AIP Conf. Proc.* **1467** (2012) 57–61 [[arXiv:1206.0161](#)].
- [P2] S. Iwamoto,  
*LHC SUSY searches after the Higgs discovery: respecting the muon  $g-2$* ,  
*SLAC eConf C130213.1* (2013) 15–21 [[arXiv:1304.5171](#)].

### In reports

- [R1] T. Golling, M. Hance, P. Harris, M. L. Mangano, et al. (eds.),  
*Physics at a 100 TeV pp collider: beyond the Standard Model phenomena*,  
Chapter 3 of the “Physics at the FCC-hh” Report [[arXiv:1606.00947](#)].
- [R2] LHeC and FCC-he Study Group (P. Agostini et al.),  
*The Large Hadron-Electron Collider at the HL-LHC*,  
*J. Phys. G* **48** (2021) 110501 [[arXiv:2007.14491](#)].
- [R3] M. Endo, K. Hamaguchi, S. Iwamoto, S. Kawada, et al.,  
*Stau study at the ILC and its implication for the muon  $g-2$  anomaly*,  
Contribution to Snowmass 2021 [[arXiv:2203.07056](#)].

### Associated reports

- [R4] FCC Collaboration; M. Mangano et al. (eds.),  
*FCC Physics Opportunities* (Future Circular Collider Conceptual Design Report Vol. 1),  
*Eur. Phys. J. C* **79** (2019) 474.
- [R5] FCC Collaboration; M. Benedikt et al. (eds.),  
*FCC-ee: The Lepton Collider* (Future Circular Collider Conceptual Design Report Vol. 2),  
*Eur. Phys. J. Special Topics* **228** (2019) 281–623.
- [R6] FCC Collaboration; M. Benedikt et al. (eds.),  
*FCC-hh: The Hadron Collider* (Future Circular Collider Conceptual Design Report Vol. 3),  
*Eur. Phys. J. Special Topics* **228** (2019) 755–1107.
- [R7] FCC Collaboration; F. Zimmermann et al. (eds.),  
*HE-LHC: The High-Energy Large Hadron Collider* (Future Circular Collider Conceptual Design Report Vol. 4),  
*Eur. Phys. J. Special Topics* **228** (2019) 1109–1382.
- [R8] The ILC International Development Team and the ILC community; A. Aryshev et al. (eds.),  
*The International Linear Collider: Report to Snowmass 2021*, [arXiv:2203.07622](#).

- [R9] T. Bose, A. Boveia, C. Doglioni, S. P. Griso, et al. (eds.),  
*Report of the Topical Group on Physics Beyond the Standard Model at Energy Frontier for Snowmass 2021*,  
[arXiv:2209.13128](https://arxiv.org/abs/2209.13128).

## CONFERENCE CONTRIBUTIONS

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### invited talks

- 17 Dec. 2023 invited talk: *Beam-dump experiments and new-physics searches*  
 “2023 NCTS Annual Theory Meeting” at National Taiwan University, Taiwan
- 10 Nov. 2022 invited talk: *Beam dump and new physics search*  
 “Flavor Physics Workshop 2022” at Izunokuni, Japan
- 25 Oct. 2017 invited talk: *Charm-tagging for new physics at the LHC*  
 “Workshop on Beyond Standard Model and the Early Universe” at Tohoku U., Japan
- 18–19 Oct. 2016 invited talk: *BSM at Colliders*  
 “Search for New Physics through the Higgs Boson” at Gwangju, South Korea

### general contributions

- 24 Aug. 2023 *New physics searches at ILC beam-dump*  
 “SI2023” at Sun-Link-Sea, Taiwan
- 8 Jul. 2022 *SUSY scenarios for muon  $g-2$  anomaly: LHC Run 2 and future*  
 “ICHEP 2022” at Bologna, Italy
- 2 Feb. 2021 *SUSY Phenomenology at the LHC*  
 “ELFT Winter School” at ELTE, Hungary
- 28 Nov. 2018 *MSSM4G scenario and Vectorlike lepton searches at the LHC*  
 “DISCRETE 2018” at Wien, Austria
- 22 Aug. 2018 *SUSY explanation of  $g-2$  anomaly, explored at the LHC*  
 “Beyond Standard Model: Where do we go from here?” at GGI, Italy
- 4 May 2018 *MSSM in light of the muon  $g-2$  anomaly and dark matter*  
 “KAIST–KU–PNU Joint Workshop” at KAIST, South Korea
- 27 Aug. 2017 *Long-Lived Charged Particles at FCC-hh and FCC-he*  
 “SI2017” at Fuji-Yoshida, Japan
- 18 Jan. 2017 *LLCP at FCC-hh*  
 “1st FCC Physics Workshop” at CERN, Switzerland
- 25 Dec. 2016 *MSSM4G scenario*  
 “Israel Physical Society 62nd annual meeting” at Tel Aviv University, Israel
- 24 Aug. 2016 *Gauge mediation with flavor violation*  
 “Effective Field Theories as Discovery Tools” at MITP, Germany
- 13 Dec. 2015 *Long-lived sleptons at a 100 TeV pp collider (and at the 14 TeV LHC)*  
 “Israel Physical Society 61st annual meeting” at Bar Ilan University, Israel

- 24 Aug. 2015 *Long-lived sleptons at a 100 TeV pp collider (and at the 14 TeV LHC)*  
“SUSY 2015” at Tahoe, CA, the United States
- 25 Aug. 2014 *CP-safe gravity mediation and muon  $g-2$*   
“SI2014” at Fuji-Yoshida, Japan
- 30 Jul. 2014 *CP-safe gravity mediation and muon  $g-2$*   
“Progress of Particle Physics 2014” at YITP, Japan
- 21 Jul. 2014 *ILC measurement of SUSY muon  $g-2$*   
“ILC Summer Camp 2014” at Kurayoshi, Japan
- 13 Feb. 2014 *ILC capability of measuring SUSY-contribution to  $(g-2)_\mu$*   
“BURI 2014” at University of Toyama, Japan
- 7 Dec. 2013 *Light SUSY is motivated by muon  $g-2$  anomaly*  
“ATLAS-Japan workshop” at The University of Tokyo, Japan
- 20 Nov. 2013 *AMS-02 results and decaying gravitino dark matter*  
“PASCOS 2013” at National Taiwan University, Taiwan
- 27 Aug. 2013 *Muon  $g-2$  vs LHC in supersymmetric models*  
“SUSY 2013” at ICTP, Italy
- 13 Feb. 2013 *LHC SUSY searches after the Higgs discovery: respecting the muon  $g-2$*   
“HPNP 2013” at University of Toyama, Japan
- 6 Aug. 2012 *MSSM with Vector-like Quarks can explain 126 GeV Higgs*  
“YONUPA Summer School 2012” at Fuji-Yoshida, Japan
- 15 Mar. 2012 *Muon  $g-2$  anomaly & 125 GeV Higgs : Extra vector-like quark & LHC prospects*  
“GUT2012” at YITP, Japan
- 9 Mar. 2012  *$g-2$  and 125 GeV Higgs*  
“Sapporo Winter School 2012” at Hokkaido University, Japan
- 27 Feb. 2012 *Long-lived stau kink signature at the LHC*  
“KEK-PH 2012” at KEK, Japan
- 20 Feb. 2012 *Higgs Mass and Muon  $g-2$  in Supersymmetric Models with Vector-Like Matters*  
“Winter Toyama 2012, phenomenology & cosmology workshop” at U. Toyama, Japan
- 18 Feb. 2012 *Muon  $g-2$  anomaly & 125 GeV Higgs : Extra vector-like quark & LHC prospects*  
“Physics opportunities with LHC at 7 TeV” at KEK, Japan
- 7–8 Sep. 2011 poster: *In-flight-decay of Stau in the LHC Tracker*  
“IPMU–YITP School on Monte Carlo Tools for LHC” at YITP, Japan
- 20 Aug. 2011 *Long-lived Stau might be Detected in the LHC*  
“YONUPA Summer School 2011” at Takashima, Japan
- 13 Aug. 2011 poster: *Top Forward–Backward Asymmetry and Di-jet Cross Section in LHC*  
“SI2011 (phenomenology)” at Fuji-Yoshida, Japan
- 4 Oct. 2010 *Cosmological Constraints on R-Parity violating SUSY*  
“2nd Bethe Center Workshop” at Bad Honnef, Germany
- 8 Aug. 2010 *Phenomenology of R-Parity violating SUSY*  
“YONUPA Summer School 2010” at Kijimadaira, Japan

20 Feb. 2010 *Cosmological Constraints on R-Parity violating SUSY under Lepton Flavor Violation*  
 “KEK-PH 2010” at KEK, Japan

## SEMINAR TALKS

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- 3 Mar. 2022 interview talk: *Explore beyond the Standard Model of Particle Physics*  
 at National Sun Yat-sen University, Taiwan
- 20 Dec. 2021 interview talk: *Explore beyond the Standard Model of Particle Physics*  
 at National Taiwan University, Taiwan
- 14 Dec. 2021 *Explore beyond the Standard Model* at Eötvös Loránd University, Hungary
- 18 May 2021 *Muon  $g-2$  for SUSY (and models beyond the Standard Model)* at ELTE, Hungary
- 14 Jun. 2019 *Dark matter with Second-stage annihilation* at The University of Tokyo, Japan
- 29 May 2019 *SUSY status at the LHC, focusing on muon  $g-2$  anomaly and dark matter* at ELTE, Hungary
- 13 Dec. 2018 *MSSM in light of the muon  $g-2$  anomaly and dark matter* at University of Warsaw, Poland
- 1 May 2018 *Minimal SUSY scenarios in the light of muon  $g-2$  and dark matter* at KIAS, South Korea
- 30 Apr. 2018 *Minimal SUSY scenarios in the light of muon  $g-2$  and dark matter* at Korea U., South Korea
- 31 Jan. 2018 *Collider Pheno of MSSM4G* at Internal meeting of ATLAS SUSY WG (CERN), Switzerland
- 2 Nov. 2017 *Long-lived charged particles at FCC-hh and FCC-he* at Tohoku University, Japan
- 18 Sep. 2017 *Long-lived charged particles at future hh and he colliders* at National Taiwan U., Taiwan
- 3 May 2017 *EXPM-PHENO cross talk: Possible use of c-tag in SUSY phenomenology*  
 at Joint particle physics meeting (Weizmann Institute), Israel
- 10 Nov. 2016 *MSSM4G scenario* at IPPP, Durham U., the United Kingdom
- 7 Nov. 2016 *MSSM4G scenario* at DAMTP, U. Cambridge, the United Kingdom
- 20 Sep. 2016 *MSSM4G scenario* at The University of Tokyo, Japan
- 15 Sep. 2016 *MSSM4G scenario* at Osaka University, Japan
- 2 Sep. 2015  *$(g-2)_\mu$ -SUSY and the LHC* at University of California · Irvine, the United States
- 17 Dec. 2014 *SUSY with light electroweakino* at Joint particle physics meeting (Tel Aviv U.), Israel
- 1 May 2013 *SUSY (with explaining the muon  $g-2$ ) at the LHC* at Kavli IPMU, U. Tokyo, Japan
- 8 Feb. 2013 *SUSY at the LHC in presence of 126 GeV Higgs* at Kyushu University, Japan
- 20 Apr. 2012 *125 GeV, SUSY, tension between them* at University of Toyama, Japan
- 19 Apr. 2012 *125 GeV, SUSY, tension between them* at Niigata University, Japan
- 30 Jan. 2012 *Long-lived Stau signature in the LHC* at DESY, Germany
- 16 Jan. 2012 *Long-lived Stau signature in the LHC* at University of Bonn, Germany