

# CURRICULUM VITAE

## Yuta Yamane

Assistant Professor  
Frontier Research Institute for Interdisciplinary Sciences  
Tohoku University  
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### Academic Appointments

- since Feb. 2020 **Assistant Professor**  
Tohoku University, Japan
- Apr. 2017 – Jan. 2020 **JSPS Postdoctoral Research Fellowship for Young Scientists**  
RIKEN, Japan
- Apr. 2014 – Mar. 2017 **Postdoctoral Fellow** (16-17)  
**JSPS Postdoctoral Fellowship for Research Abroad** (14-16)  
Johannes Gutenberg University of Mainz, Germany
- May 2013 – Mar. 2014 **Visiting Scholar**  
Texas A&M University, USA
- Apr. 2012 – Mar. 2014 **JSPS Research Fellowship for Young Scientists DC2**  
Japan Atomic Energy Agency (13-14)  
Tohoku University, Japan (12-13)
- Apr. 2010 – Mar. 2012 **Fellow of Advanced Science** (Scholarship)  
Japan Atomic Energy Agency

### Education

- Mar. 2013 **Ph.D. in Physics**  
Graduate School of Science, Tohoku University, Japan  
“Theory of spinmotive force in ferromagnetic nanostructures”
- Mar. 2010 **M.S. in Physics**  
Graduate School of Science, Tohoku University, Japan  
“Theoretical study on spinmotive force in thin films of ferromagnetic metals”
- Mar. 2008 **Bachelor of Economics**  
Faculty of Economics, Tohoku University, Japan  
“Study of CVP analysis”

## Honors, Awards and Recognitions

1. Excellent Young Researcher in LEADER program (Jul. 2019)  
Japan Society for the Promotion of Science
2. Postdoctoral Research Fellowship for Young Scientists (Apr. 2017 – Jan. 2020)  
Japan Society for the Promotion of Science
3. Postdoctoral Fellowship for Research Abroad (Apr. 2014 – Mar. 2016)  
Japan Society for the Promotion of Science
4. Outstanding Ph. D. Thesis Award (Feb. 2013)  
Department of Physics, Tohoku University
5. Research Fellowship for Young Scientists DC2 (Apr. 2012 – Mar. 2014)  
Japan Society for the Promotion of Science
6. Scholarship for Fellow of Advanced Science (Apr. 2010 – Mar. 2012)  
Japan Atomic Energy Agency
7. Outstanding Master Thesis Award (Feb. 2010)  
Department of Physics, Tohoku University

## Research Funding

1. CSRN Grant for Collaborative Research Projects  
Agency: Center for Spintronics Research Network (CSRN), Tohoku University  
Title: “Theoretical study on spin-motive force aiming at its active applications in spintronics”  
Principal Investigator: Yuta Yamane  
Amount and Period: 200,000 JPY, Jun. 2020 – Mar. 2021 (Renewal Possible)
2. FRIS Internal Research Grant  
Agency: Frontier Research Institute for Interdisciplinary Sciences (FRIS), Tohoku University  
Title: “Theoretical study of spin-motive force”  
Principal Investigator: Yuta Yamane  
Amount and Period: 2,920,000 JPY, Feb. 2020 – Mar. 2021 (Renewal Possible)
3. Grants-in-Aid for JSPS Fellows [No.17J03368]  
Agency: Japan Society for the Promotion of Science (JSPS)  
Title: “Theoretical research on antiferromagnetic spintronics”  
Principal Investigator: Yuta Yamane  
Amount and Period: 4,030,000 JPY, Apr. 2017 – Jan. 2020
4. Grants-in-Aid for JSPS Fellows [No.12J11208]  
Agency: Japan Society for the Promotion of Science (JSPS)  
Title: “[Japanese] スピン起電力を中心とするスピントロニクス of 理論的研究”  
Principal Investigator: Yuta Yamane  
Amount and Period: 2,000,000 JPY, Apr. 2012 – Jan. 2014

## Publications

### Original Papers

1. S. A. Obadero, Y. Yamane, C. A. Akosa, and G. Tatara  
“Current-driven nucleation and propagation of antiferromagnetic skyrmionium”  
*Physical Review B* **102**, 014458 (2020).  
[doi.org/10.1103/PhysRevB.102.014458]
2. S. Sugimoto, Y. Nakatani, Y. Yamane, M. Ikhlas, K. Kondou, M. Kimata, T. Tomita, S. Nakatsuji, and Y. Otani  
“Electrical nucleation, displacement, and detection of antiferromagnetic domain walls in the chiral antiferromagnet Mn<sub>3</sub>Sn”  
*Communications Physics* **3**, 111 (2020).  
[doi.org/10.1038/s42005-020-0381-8]
3. Y. Yamane, O. Gomonay, and J. Sinova  
“Dynamics of noncollinear antiferromagnetic textures driven by spin current injection”  
*Physical Review B* **100**, 054415 (2019).  
[doi.org/10.1103/PhysRevB.100.054415]
4. Y. Yamane and J. Ieda  
“Skyrmion-generated spinmotive forces in inversion broken ferromagnets”  
*Journal of Magnetism and Magnetic Materials* **491**, 165550 (2019).  
[doi.org/10.1016/j.jmmm.2019.165550]
5. Y. Yamane  
“Spin-motive force due to domain-wall motion in the presence of Dzyaloshinskii-Moriya interaction”  
*Physical Review B* **98**, 174434 (2018).  
[doi.org/10.1103/PhysRevB.98.174434]
6. Y. Yamane, O. Gomonay, H. Velkov, and J. Sinova  
“Combined effect of magnetic field and charge current on antiferromagnetic domain-wall dynamics”  
*Physical Review B* **96**, 064408 (2017).  
[doi.org/10.1103/PhysRevB.96.064408]
7. Y. Yamane and J. Sinova  
“Skyrmion-number dependence of spin-transfer torque on magnetic bubbles”  
*Journal of Applied Physics* **120**, 233901 (2016).  
[doi.org/10.1063/1.4971868]
8. Y. Yamane, J. Ieda, and J. Sinova  
“Spin-transfer torques in antiferromagnetic textures: Efficiency and quantification method”  
*Physical Review B* **94**, 054409 (2016).  
[doi.org/10.1103/PhysRevB.94.054409]
9. Y. Yamane, J. Ieda, and J. Sinova  
“Electric voltage generation by antiferromagnetic dynamics”  
*Physical Review B: Rapid Communications* **93**, 180408(R) (2016).  
[doi.org/10.1103/PhysRevB.93.180408]
10. Y. Yamane, S. Hemmatiyani, J. Ieda, S. Maekawa, and J. Sinova  
“Spinmotive force due to motion of magnetic bubble arrays driven by magnetic field gradient”  
*Scientific Reports* **4**, 6901 (2015).

[doi.org/10.1038/srep06901]

11. Y. Yamane, J. Ieda, and S. Maekawa  
“Spinmotive force with static and uniform magnetization induced by a time-varying electric field”  
*Physical Review B* **88**, 014430 (2013).  
[doi.org/10.1103/PhysRevB.88.014430]
12. J. Ieda, Y. Yamane, and S. Maekawa  
“Real-time analysis of the spinmotive force due to domain wall motion”  
*Journal of the Korean Physical Society* **62**, 1802 (2013).  
[doi.org/10.3938/jkps.62.1802]
13. Y. Yamane, J. Ieda, and S. Maekawa  
“Stability of spinmotive force in perpendicularly magnetized nanowires under high magnetic fields”  
*Applied Physics Letters* **100**, 162401 (2012).  
[doi.org/10.1063/1.4703933]
14. M. Hayashi, J. Ieda, Y. Yamane, J. Ohe, Y. K. Takahashi, S. Mitani, and S. Maekawa  
“Time-domain observation of the spinmotive force in permalloy nanowires”  
*Physical Review Letters* **108**, 147202 (2012).  
[doi.org/10.1103/PhysRevLett.108.147202]
15. Y. Yamane, K. Sasage, T. An, K. Harii, J. Ohe, J. Ieda, S. E. Barnes, E. Saitoh, and S. Maekawa  
“Continuous generation of spinmotive force in a patterned ferromagnetic film”  
*Physical Review Letters* **107**, 236602 (2011).  
[doi.org/10.1103/PhysRevLett.107.236602]
16. Y. Yamane, J. Ieda, J. Ohe, S. E. Barnes, and S. Maekawa  
“Spinmotive force due to intrinsic energy of ferromagnetic nanowires”  
*Applied Physics Express* **4**, 093003 (2011).  
[doi.org/10.1143/APEX.4.093003]
17. Y. Yamane, J. Ieda, J. Ohe, S. E. Barnes, and S. Maekawa  
“Equation-of-motion approach of spin-motive force”  
*Journal of Applied Physics* **109**, 07C735 (2011).  
[doi.org/10.1063/1.3565398]

## Review Papers

1. Y. Yamane and J. Ieda  
“Spin torques and electrical voltage generation in antiferromagnetic nanotextures”  
*Magnetics Japan* [まぐね in Japanese] **13**(5), 235-241 (2018).
2. J. Ieda, Y. Yamane, and S. Maekawa  
“Spinmotive force in magnetic nanostructures”  
*SPIN* **03**, 1330004 (2013).  
[doi.org/10.1142/S2010324713300041]

## Other Articles

1. Y. Yamane, K. Sasage, T. An, K. Harii, J. Ohe, J. Ieda, S. E. Barnes, E. Saitoh, and S. Maekawa  
“Highlights from the Asia Pacific Region: Continuous generation of spinmotive force in a patterned ferromagnetic film”  
*Asia Pacific Physics Newsletter* **1**(2), 26-27 (2012).  
[doi.org/10.1142/S2251158X12000239]
2. Y. Yamane  
“[Japanese] 強磁性金属薄膜におけるスピン起電力の理論”  
*Bussei Kenkyu* [物性研究 in Japanese] **94**(6), 714-744 (2010).

## Conference/Workshop Presentations

### Invited Talks

1. “*Antiferromagnetic Spintronics*”  
Spintronics Lectures at National University of San Marcos (UNI-PERU) and National University of Engineering (UNMSM-PERU)  
Lima, Peru, Oct. 16 – 19, 2019.
2. “*Dynamics of noncollinear antiferromagnetic domain wall driven by spin current injection*”  
The Korean Magnetics Society 2019 Summer Conference  
Busan, South Korea, May 22 – 24, 2019.
3. “[Japanese] *Noncollinear 反強磁性体におけるスピン流誘起磁化ダイナミクス*”  
RIEC Workshop on Nation-wide Cooperative Research Projects  
Tohoku University, Sendai, Japan, Feb. 1, 2019.
4. “*Electric voltage generation by antiferromagnetic dynamics*”  
Workshop on Antiferromagnetic Spintronics  
Grenoble, France, Oct. 25 – 27, 2017.
5. “*Antiferromagnetic spintronics – spin-transfer torque and spin-motive force*”  
Quantum Material Seminar  
Institute for Solid State Physics, University of Tokyo, Japan, Jan. 27, 2017.
6. “*Spin-transfer torque and spin-motive force in antiferromagnets*”  
Invited Seminar  
Max Planck Institutes Stuttgart, Germany, Jun. 17, 2016.
7. “*Current-driven motion of antiferromagnetic skyrmions in the presence of magnetic fields*”  
Workshop on Spin Orbit Coupling and Spin Mechanics  
Mainz, Germany, Oct. 23 – 24, 2015.
8. “*Transport phenomena in ferromagnetic bubble systems*”  
Spintronics Meeting Mainz-Lanna  
Prague, Czech Republic, Jun. 11 – 12, 2015.
9. “*Newtonian equation approach to transport phenomena in ferromagnets*”  
The 25th ASRC International Workshop on New Insights in the Physics of Magnetic Nanostructures  
Tokai, Japan, Jan. 27, 2015.

10. “*Semi-classical approach to spintronics current induced effects*”  
Spintronics Meeting Mainz-Lanna  
Mainz, Germany, Dec. 3 – 4, 2014.
11. “*Theory of spinmotive force in ferromagnetic nanostructures*”  
Seminars by Outstanding Ph.D. Thesis Award Recipients  
Tohoku University, Sendai, Japan, Feb. 23, 2013.

## Contributed Presentations

1. “*Dynamics of noncollinear antiferromagnetic domain walls driven by spin current injection*” [Oral]  
International Workshop Spintronics 2019  
Ollantaytambo, Peru, Oct. 20 – 25, 2019.
2. “*Enhancement of spin-motive force in systems with broken inversion symmetry*” [Oral]  
APS March Meeting 2019  
Boston, USA, Mar. 4 – 8, 2019.
3. “*Theory of spin injection into noncollinear antiferromagnets*” [Poster]  
9th Joint European Magnetic Symposia (JEMS 2018)  
Mainz, Germany, Sep. 3 – 7, 2018.
4. “*Theory of spin injection into noncollinear antiferromagnets*” [Poster]  
International Conference on Magnetism (ICM) 2018  
San Francisco, USA, Jul. 15 – 20, 2018.
5. “*Electric detection of antiferromagnetic dynamics*” [Poster]  
SpinTECH IX International School and Conference 2017  
Fukuoka, Japan, Jul. 4 – 8, 2017.
6. “*Electric voltage generation by antiferromagnetic dynamics*” [Oral]  
8th Joint European Magnetic Symposia (JEMS 2016)  
Glasgow, Scotland, Aug. 21 – 26, 2016.
7. “*Relation between dynamics of magnetic bubbles and electron transport*” [Poster]  
20th International Conference on Magnetism (ICM)  
Barcelona, Spain, Jul. 5 – 10, 2015.
8. “*Spin-transfer torque and spin-motive force in magnetic bubble systems*” [Oral]  
Recent Trends in Nanomagnetism, Spintronics and Their Applications (RTNSA) 2015  
Ordizia, Spain, Jun. 30 – Jul. 3, 2015.
9. “*Spinmotive force induced by magnetic bubble motion*” [Poster]  
Spin Caloritronics VI School and Conference 2014  
Irsee, Germany, Jul. 14 – 18, 2014.
10. “*Spinmotive forces induced by domain wall motion in ferromagnetic metals and dilute magnetic semiconductors*” [Poster]  
International Union and Materials Research Societies – International Conference on Electronic Materials (IUMRS-ICEM) 2012  
Yokohama, Japan, Sep. 23 – 28, 2012.
11. “*Spinmotive forces in spin-orbit coupling systems*” [Oral]  
The 19th International Conference on Magnetism (ICM)

Busan, South Korea, Jul. 8 – 13, 2012.

12. “*Continuous dc spinmotive force in a patterned ferromagnetic film*” [Oral]  
APS March Meeting 2012  
Boston, USA, Feb. 27 – Mar. 2, 2012.
13. “*Numerical study on spinmotive force induced by domain wall motion*” [Poster]  
The 2nd ASRC International Workshop on Magnetic Materials and Nanostructures  
Tokai, Japan, Jan. 10 – 13, 2012.
14. “*Wire shape effect on spinmotive force*” [Poster]  
6th International School and Conference on Spintronics and Quantum Information Technology (SPINTECH6)  
Matsue, Japan, Aug. 1 – 5, 2011.
15. “*Generation of dc spin-motive force in a patterned ferromagnetic film*” [Poster]  
5th International Workshop on Spin Currents  
Sendai, Japan, Jul. 25 – 28, 2011.
16. “*Equations-of-motion approach of spin-motive force*” [Oral]  
55th Annual Conference on Magnetism and Magnetic Materials (MMM)  
Atlanta, USA, Nov. 14 – 18, 2010.
17. “*Spin motive force in an asymmetrically-shaped thin permalloy film*” [Poster]  
4th International Workshop on Spin Currents and 2nd International Workshop on Spin caloritronics  
Sendai, Japan, Feb. 8 – 10, 2010.

## Contributed Presentations in Japanese Domestic Meetings

1. “[*Japanese*] 空間反転対称性が破れた系におけるスピン起電力” [Poster]  
JPS Annual Meeting 2019  
Kyushu University, Fukuoka, Mar. 14 – 17, 2019.
2. “[*Japanese*] Noncollinear 反強磁性体へのスピン注入の理論研究” [Oral]  
JPS Annual Meeting 2018  
Tokyo University of Science, Tokyo, Mar. 22 – 25, 2018.
3. “*Theory of spin injection into noncollinear antiferromagnets*” [Poster]  
Status Meeting on Nano Spin Conversion  
Kyoto University, Kyoto, Mar. 12 – 13, 2018.
4. “[*Japanese*] 磁気バブルダイナミクスのスカーミオン数依存性” [Poster]  
JPS Autumn Meeting 2017  
Iwate University, Morioka, Sep. 21 – 24, 2017.
5. “[*Japanese*] 反強磁性体における電流誘起スピン波ドップラー効果” [Oral]  
JPS Autumn Meeting 2016  
Kanazawa University, Kanazawa, Sep. 13 – 16, 2016.
6. “[*Japanese*] 電界効果によるスピン流注入” [Oral]  
JPS Autumn Meeting 2012  
Yokohama National University, Yokohama, Sep. 18 – 21, 2012.

7. “[Japanese] 垂直磁化膜磁壁移動によるスピンの起電力” [Oral]  
JPS Annual Meeting 2012  
Kwansei Gakuin University, Nishinomiya, Mar. 24 – 27, 2012.
8. “[Japanese] 磁性細線の内部エネルギーによるスピンの起電力” [Oral]  
JPS Autumn Meeting 2011  
University of Toyama, Toyama, Sep. 21 – 24, 2011.
9. “[Japanese] 細線形状効果による磁壁移動とスピンの起電力 (2)” [Oral]  
JPS Annual Meeting 2011  
Niigata University, Niigata, Mar. 25 – 28, 2011 (Cancelled due to the earthquake).
10. “[Japanese] 細線形状効果による磁壁移動とスピンの起電力” [Poster]  
Workshop on Creation and Control of Spin Current  
University of Tokyo, Tokyo, Jan. 6 – 7, 2011.
11. “[Japanese] 細線形状効果による磁壁移動とスピンの起電力” [Oral]  
JPS Autumn Meeting 2010  
Osaka Prefecture University, Osaka, Sep. 23 – 26, 2010.
12. “[Japanese] スピン波共鳴状態に対するスピンの注入の効果” [Oral]  
JPS Annual Meeting 2010  
Okayama University, Okayama, Mar. 20 – 23, 2010.
13. “[Japanese] 非対称形状を持つパーマロイ薄膜におけるスピンの起電力” [Poster]  
Next-Generation Integrated Nanoscience Simulation Software 4th Open Symposium  
Institute for Molecular Science, Okazaki, Mar. 3 – 4, 2010.
14. “[Japanese] 非対称形状を持つパーマロイにおけるスピンの起電力” [Oral]  
JPS Autumn Meeting 2009  
Kumamoto University, Kumamoto, Sep. 25 – 28, 2009.
15. “[Japanese] 非対称形状パーマロイ薄膜におけるスピンの起電力の数値解析” [Poster]  
Workshop on Creation and Control of Spin Current  
Hokkaido University, Sapporo, Aug. 9 – 11, 2009.