

# JUNYA YAGI

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## Personal Information

**Date of Birth**      March 13, 1982  
**Citizenship**      Japanese  
**Languages**        English (fluent), Japanese (mother tongue)

## Education

Sept 2003            PhD in Physics (supervisor: Gregory W. Moore)  
    – Oct 2009        Department of Physics and Astronomy, **Rutgers University**, USA  
Apr 2002            Master's Program in Physics  
    – Sept 2003       Graduate School of Science, **Chiba University**, Japan  
Apr 1999            BS in Physics  
    – Mar 2002       Frontier Science Program, **Chiba University**, Japan

## Positions

Dec 2020 –           Assistant Professor  
                         Yau Mathematical Sciences Center, **Tsinghua University**, China  
Sept 2020           Visiting Scholar  
    – Dec 2020       Yau Mathematical Sciences Center, **Tsinghua University**, China  
Oct 2017            Postdoctoral Researcher  
    – Dec 2020       **Perimeter Institute for Theoretical Physics**, Canada  
Oct 2015            Research Assistant Professor  
    – Sept 2017       Faculty of Physics, **University of Warsaw**, Poland  
Oct 2013            INFN Postdoctoral Fellow  
    – Oct 2015       **INFN – Sezione di Trieste** and **SISSA**, Italy  
Oct 2012            Research Fellow  
    – Sept 2013       Department of Physics, **National University of Singapore**  
Oct 2011            Postdoctoral Fellow  
    – Oct 2012       Department of Mathematics, **University of Hamburg**, Germany  
Apr 2010            Specially-Appointed Assistant Professor  
    – Oct 2011       Center for Frontier Science, **Chiba University**, Japan

## Fellowship, Scholarship and Awards

2013 – 2015	INFN Postdoctoral Fellowship in Theoretical Physics Istituto Nazionale di Fisica Nucleare
2007	Richard J. Plano Outstanding Teaching Assistant Award Department of Physics and Astronomy, Rutgers University
1999 – 2002	Shin-Nihon Scholarship, Shin-Nihon Scholarship Foundation
1998	President's Prize, Mathematical Sciences Contest, Chiba University

## Teaching Experience

- *Supersymmetric field theories in low dimensions*, Fall 2020 at YMSC, Tsinghua University. Lecture series (2 hours/week  $\times$  7 weeks) on  $\Omega$ -deformation of B-twisted 2d  $\mathcal{N} = (2, 2)$  supersymmetric sigma models and its applications to higher-dimensional quantum field theories.
- Teaching assistant at the Department of Physics and Astronomy, Rutgers University, 2005–2008. Taught general physics courses (labs and recitation sessions), each consisting of about a couple of dozens students:
  - Physics 115 & 116, Extended Analytical Physics (Fall 2005, Spring 2006)
  - Physics 124, Analytical Physics (Spring 2008)
  - Physics 161, Elements of Physics (Fall 2006, Fall 2007)
  - Physics 201, Extended General Physics (Spring 2007)
  - Physics 204, General Physics (Summer 2008)
  - Physics 205/229 & 206, General Physics Labs (Summer 2006, Summer 2007)
- Various lectures aimed at graduate students and researchers:
  - Localization and equivariant cohomology, University of Hamburg Mathematical Physics Seminar, April 26, 2011
  - Topological A- and B-models, University of Hamburg Mathematical Physics Seminar, December 15, 2011
  - Chiral algebras and the Stolz–Höhn conjecture, University of Hamburg Algebra and Mathematical Physics Research Seminar, January 10, 17 & 31, 2012
  - Supersymmetric gauge theories, University of Warsaw String Theory Journal Club, November 2, 2016
  - Quiver gauge theories and cluster algebras, University of Warsaw String Theory Journal Club, December 12, 2016

## Organization Experience

- *Advanced School on Integrability*, University of Warsaw, March 6–9, 2017 (67 participants from 13 countries)

## Talks

### Invited Talks at Conferences and Workshops

- *Wilson–’t Hooft lines as transfer matrices*  
“Online 2020 NTU–Kyoto High Energy Physics Workshop,” December 3, 2020
- *Poisson vertex algebras in supersymmetric field theories*  
“APCTP Workshop on Quantum Field Theory and String Theory,” Asia Pacific Center for Theoretical Physics, November 22, 2019
- *Chiral algebras from  $\Omega$ -deformation*  
“Unfashionable Pursuits: Informal Workshop on SCFT and Supergravity – I,” Institute of Theoretical Physics, Chinese Academy of Sciences, November 15, 2019
- *$\Omega$ -deformation of  $B$ -twisted theories*  
“Unfashionable Pursuits: Informal Workshop on SCFT and Supergravity – I,” Institute of Theoretical Physics, Chinese Academy of Sciences, November 13, 2019
- *String theory, gauge theories and integrable systems*  
“Higher structures in holomorphic and topological field theory,” IHÉS, January 17, 2019
- *Unification of integrability in supersymmetric gauge theories*  
“String and M-Theory: The New Geometry of the 21st Century,” National University of Singapore, December 13, 2018
- *“Integrable lattice models from gauge theory” from string theory*  
One-day workshop at Seikei University, March 15, 2018
- *String theory and integrable lattice models*  
“Elliptic Hypergeometric Functions in Combinatorics, Integrable Systems and Physics,” Erwin Schrödinger Institute, Vienna, March 24, 2017
- *Branes, TQFTs and integrable lattice models*  
“5th Workshop on Combinatorics of Moduli Spaces, Hurwitz Numbers, and Cohomological Field Theories,” Moscow, June 7, 2016
- *Quiver gauge theories and integrable lattice models*  
“Physics and Mathematics of Knot Homologies,” Simons Center for Geometry and Physics, Stony Brook University, June 4, 2015
- *$\mathcal{N} = (0, 2)$  supersymmetry and Höhn–Stolz conjecture*  
“Mathematics of String Theory,” Center of Mathematical Sciences, Zhejiang University, July 2, 2013

### Contributed Talks at Conferences and Workshops

- *String theory and integrable lattice models*  
“stringtheory.pl/2017,” Warsaw, April 21, 2017
- *$(2, 0)$  theory, cigars, and AGT*  
“String–Math 2012,” Bonn, July 18, 2012

- *Vanishing chiral algebras and Höhn–Stolz conjecture*  
“String–Math 2011,” Philadelphia, June 28, 2011
- *Vanishing chiral algebras*  
“DESY Theory Workshop 2010,” DESY, Hamburg, September 23, 2010

## Invited Seminar Talks

- *Wilson–’t Hooft lines as transfer matrices*  
KIAS String Seminar, August 17, 2020
- *Disk, interval, point: on constructions of quantum field theories with holomorphic action functionals*  
QFT, Geometry and Representation Theory Working Seminar, May 13, 2020
- *Disk, interval, point: on constructions of quantum field theories with holomorphic action functionals*  
Simons Center for Geometry and Physics, Stony Brook University, March 8, 2020
- *Unification of integrability in supersymmetric gauge theories*  
UC Davis, February 15, 2019
- *Unification of integrability in supersymmetric gauge theories*  
Caltech, High Energy Theory seminar, February 1, 2019
- *String theory, gauge theories and integrable systems*  
Yau Mathematical Sciences Center, Tsinghua University, December 20, 2018
- *Unification of integrability in supersymmetric gauge theories*  
Kavli IPMU, December 18, 2018
- *Unification of integrability in supersymmetric gauge theories*  
IHES, November 8, 2018
- *“Integrable lattice models from gauge theory” from string theory*  
National University of Singapore, String Theory group meetings, March 7–8, 2018
- *Integrable lattice models and supersymmetric gauge theories*  
University of Warsaw, KMMF Seminar “Theory of Duality,” May 4, 2017
- *String theory and integrable lattice models*  
Perimeter Institute for Theoretical Physics, Quantum Fields and Strings Seminar, April 26, 2017
- *Surface defects as transfer matrices*  
University of Tokyo, Hongo, High Energy Theory Seminar, March 9, 2016
- *Surface defects as transfer matrices*  
KIAS, String Theory & Gravity Seminar, February 24, 2016
- *Surface defects as transfer matrices*  
University of Tokyo, Komaba, Particle Theory Seminar, February 18, 2016
- *Surface defects as transfer matrices*  
Kavli IPMU, Mathematics–String Theory Seminar, February 16, 2016

- *Quiver gauge theories, TQFTs and integrable lattice models*  
Perimeter Institute for Theoretical Physics, December 4, 2015
- *Quiver gauge theories, TQFTs and integrable lattice models*  
Caltech, High Energy Theory Seminar, November 6, 2015
- *Quiver gauge theories and integrable lattice models*  
University of Warsaw, Seminar "Exact Results in Quantum Theory and Gravity,"  
April 1, 2016
- *Quiver gauge theories and integrable lattice models*  
Imperial College London, September 4, 2015
- *Quiver gauge theories and integrable lattice models*  
Erwin Schrödinger Institute, Vienna, June 17, 2015
- *$\Omega$ -deformation and quantization*  
Kavli IPMU, Mathematics–String Theory Seminar, July 8, 2014
- *$\Omega$ -deformation and quantization*  
University of Tokyo, Komaba, Particle Theory Seminar, July 3, 2014
- *M5-branes on  $S^1 \times S^2$ : complex Chern-Simons theory and quantum integrable systems*  
Nikhef, Theory Seminar, February 2, 2014
- *Compactification on the  $\Omega$ -background and the AGT correspondence*  
LMU Munich, Fields and Strings Seminar, June 28, 2012

## Publications

### In Refereed Journals

1. K. Maruyoshi, T. Ota and **J. Yagi**, *Wilson–t Hooft lines as transfer matrices*  
*JHEP* **01** (2021) 072 [arXiv:2009.12391]
2. N. Ishtiaque and **J. Yagi**, *Disk, interval, point: on constructions of quantum field theories with holomorphic action functionals*  
*JHEP* **06** (2020) 180 [arXiv:2002.10488]
3. J. Oh and **J. Yagi**, *Poisson vertex algebras in supersymmetric field theories*  
*Lett. Math. Phys.* **110** (2020) 2245–2275 [arXiv:1908.05791]
4. J. Oh and **J. Yagi**, *Chiral algebras from  $\Omega$ -deformation*  
*JHEP* **08** (2019) 143 [arXiv:1903.11123]
5. **J. Yagi**, *Surface defects and elliptic quantum groups*  
*JHEP* **06** (2017) 013 [arXiv:1701.05562]
6. K. Maruyoshi and **J. Yagi**, *Surface defects as transfer matrices*  
*Prog. Theor. Exp. Phys.* (2016) 113B01 [arXiv:1606.01041]
7. **J. Yagi**, *Quiver gauge theories and integrable lattice models*  
*JHEP* **10** (2015) 065 [arXiv:1504.04055]
8. Y. Luo, M.-C. Tan, **J. Yagi** and Q. Zhao,  *$\Omega$ -deformation of B-twisted gauge theories and the 3d-3d correspondence*  
*JHEP* **02** (2015) 047 [arXiv:1410.1538]
9. **J. Yagi**,  *$\Omega$ -deformation and quantization*  
*JHEP* **08** (2014) 112 [arXiv:1405.6714]
10. Y. Luo, M.-C. Tan and **J. Yagi**,  *$\mathcal{N} = 2$  supersymmetric gauge theories and quantum integrable systems*  
*JHEP* **03** (2014) 090 [arXiv:1310.0827]
11. **J. Yagi**, *3d TQFT from 6d SCFT*  
*JHEP* **08** (2013) 017 [arXiv:1305.0291]
12. **J. Yagi**, *Compactification on the  $\Omega$ -background and the AGT correspondence*  
*JHEP* **09** (2012) 101 [arXiv:1205.6820]
13. **J. Yagi**, *On the six-dimensional origin of the AGT correspondence*  
*JHEP* **02** (2012) 020 [arXiv:1112.0260]
14. **J. Yagi**, *Chiral algebras of  $(0, 2)$  models*  
*Adv. Theor. Math. Phys.* **16** (2012) 1–37 [arXiv:1001.0118]
15. M.-C. Tan and **J. Yagi**, *Chiral algebras of  $(0, 2)$  models: beyond perturbation theory*  
*Lett. Math. Phys.* **84** (2008) 257–273

## Preprints

16. K. Costello and **J. Yagi**, *Unification of integrability in supersymmetric gauge theories*  
arXiv:1810.01970
17. M.-C. Tan and **J. Yagi**, *Chiral algebras of  $(0, 2)$  sigma models: beyond perturbation theory – II*  
arXiv:0805.1410
18. M.-C. Tan and **J. Yagi**, *Chiral algebras of  $(0, 2)$  sigma models: beyond perturbation theory*  
arXiv:0801.4782

## Invited Review Article

19. **J. Yagi**, *Branes and integrable lattice models*  
Mod. Phys. Lett. A **32** (2017) 1730003 [arXiv:1610.05584]

## Conference Proceedings (Refereed)

20. **J. Yagi**, *Vanishing chiral algebras and the Höhn–Stolz conjecture*  
*String–Math 2011*, 477–484, Proc. Sympos. Pure Math., 85, Amer. Math. Soc., Providence, RI, 2012 [arXiv:1002.0028]

## References

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