JASON F. PARISI

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Nationality: UK, Italy

Education

University of Oxford — Oxford, UK *2016 - 2020*

Ph.D in Theoretical Physics, Merton College.
Thesis title: Microstability in the Pedestal. Advisor: Professor Felix Parra.

Yale University — New Haven, USA *2011 - 2016*

B.S. in Physics (Intensive). GPA: 3.9/4.0. Graduated with Honors, and with Distinction in Physics.

Tsinghua University — Beijing, China *2013 - 2014*

U.C. Berkeley Inter-University Program in advanced Modern and Classical Chinese.

Research Experience

Princeton Plasma Physics Laboratory — Princeton, USA *Aug 2021 -*
Associate Research Physicist — NSTX-U

Research physicist studying turbulence in spherical tokamaks, with a particular emphasis on transport in the NSTX-U device. Supervisor: Dr. Walter Guttenfelder.

Culham Centre for Fusion Energy — Culham, UK *Oct 2020 - Aug 2021*
Culham Fusion Research Fellow

Won a two year Research Fellowship at CCFE; responsible for building own research program in fusion research. My program focuses on electron pedestal turbulence and transport in a variety of toroidal devices. The research areas are: (1) interacting toroidal and slab electron temperature gradient (ETG) turbulence, (2) the effect of shaping on microstability and turbulent transport, (3) microstability in stellarators, (4) saturation mechanisms for slab ETG turbulence. Supervisor: Dr. Colin Roach.

Rudolf Peierls Centre for Theoretical Physics, Oxford University — Oxford, UK *2016 - 2020*
Researcher (Plasma Theory and Computation)

Investigated microstability in fusion pedestals. Discovered a new type of toroidal electron temperature gradient (ETG) instability that exists in steep gradient regions. Performed theoretical and computational linear and nonlinear analysis of the mode, determining its importance for pedestal transport. Supervisors: Prof. Felix Parra, Dr. Colin Roach.

Yale Astronomy Department — New Haven, USA *2015 - 2016*
Research Assistant (Astrophysics and Cosmology Theory and Computation)

Researched properties of galaxy groups in the Illustris cosmological simulation. Wrote new galaxy group and halo finder algorithm for Illustris and Sloane Digital Sky Survey. Supervisor: Prof. Natarajan.

Yale Physics Department — New Haven, USA *2014 - 2016*
Research Assistant (Particle and Field Theory)

Used numerical methods to model a finite operator product expansion for models in conformal field theory. Analytically derived bounds on terms in the derivative sum rule, and compared with computations. Wrote program that generates OPE coefficients for arbitrary operators in the 2D and 3D Ising Model. Supervisor: Prof. Poland.

University of Science and Technology in China Plasma and Fusion Laboratory — Hefei, China *Jul 2015*
Research Assistant (Plasma Experiment)

Developed a series of techniques to improve plasma confinement and implement transport barriers in the KMAX field reversed magnetic mirror device at USTC. Supervisor: Prof. Sun.

Rudolf Peierls Centre for Theoretical Physics, Oxford University and Culham Centre for Fusion Energy — Oxford, UK *Jun - Aug 2014*
Research Assistant (Plasma Theory and Computation)

Investigated turbulent transport mechanisms with equilibrium $\mathbf{E} \times \mathbf{B}$ velocity shear in tokamaks. Compared scaling laws with predictions from critical balance. Supervisors: Prof. Felix Parra, Prof. Michael Barnes, Dr. Colin Roach.

Tsinghua University Plasma and Fusion Physics Laboratory — Beijing, China *2013 - 2014*
Research Assistant (Plasma Theory and Experiment)

Princeton Plasma Physics Laboratory — Princeton, USA *Jun - Aug 2013*
Research Assistant (Plasma Theory and Computation)

Yale Center for Astronomy and Astrophysics — New Haven, USA *Sep - Dec 2012*
Research Assistant (Astrophysics Theory)

Peer Reviewed Publications

J. Parisi, et al. ***Electron temperature gradient turbulence in the pedestal is statistically inhomogeneous*****, Physical Review Letters/JPP Letters** ***In preparation*** **2021**

J. Parisi, et al. ***Toroidal and slab ETG instability dominance in the linear spectrum of JET-ILW pedestals*****, Nuclear Fusion, 60(126045) 2020**

C. Giroud et al. ***Optimisation of JET-DT and ITER operation by developing an understanding of the role of low-z impurity on the H-mode pedestal*****, 27th IAEA Fusion Energy Conference 2018**

L. Jiangtao, J. Parisi, Z. Wang, Y. Pu ***The energy evolution of surface plasmons on an aluminium surface during the oxidation process*****, Journal of Applied Physics D, 47(425304) 2014**

Books

J. Parisi, J. Ball ***The Future of Fusion Energy*****, World Scientific, 2019**

Fellowships, Grants, and Awards

EUROfusion Researcher Grant — Culham, UK *2021*
Awarded a research fellowship for 2 years on project: Finding Transport-Optimized Magnetic Geometries in the Tokamak Edge.

EUROfusion Marconi Computing Allocation — Culham, UK *2021*
Principal Investigator on EUROfusion Pedestal ETG Computing Project.

Culham Fusion Research Fellowship — Culham, UK *2020-2021*
Awarded research fellowship for plasma physics research at Culham Centre for Fusion Energy.

Merton College Master Grant — Oxford, UK *Feb 2019*

EPSRC Excellence Prize Scholarship — Oxford, UK *Oct 2016 - Sep 2020*
Fully funded scholarship for theoretical physics Ph.D at University of Oxford (3.5 years).

UKAEA Scholarship — Oxford, UK *Oct 2016 - Sep 2020*
Fully funded scholarship for theoretical physics Ph.D at University of Oxford (0.5 years).

Mary Christine Warfield Award — New Haven, USA *May 2016*
Awarded to graduating Yale senior for outstanding academic achievement, and strength in the face of adversity.

Adrian Van Sinderen Book Collecting Prize — New Haven, USA *Mar 2016*
Awarded senior honorable mention for collection on Chinese theoretical physics.

STARS II Fellow — New Haven, USA *2014-2016*
Awarded to Yale College students in their Junior year for research achievement and potential. Supports research during Junior and Senior years, and research at Yale over the summer.

Louis Putnam Myers Memorial Scholarship — New Haven, USA *2014, 2015*
Named scholarship awarded to Yale College students for academic achievement.

Yale Greenberg Scholar (Yale Light Fellowship) — New Haven, USA *2013-2014*
Awarded fellowship for full academic year of intensive Chinese and physics study at Tsinghua University, China.

Rieser Fellow (Bulletin of the Atomic Scientists) — Chicago, USA *Jun 2013*
Awarded a Rieser Fellowship for plasma physics research at Princeton Plasma Physics Laboratory and policy research at Princeton University.

Yale Summer Environmental Fellow (Yale Environmental Studies) — New Haven, USA *Apr 2013*
Awarded fellowship for plasma physics research at Princeton Plasma Physics Laboratory.

Alexander P. Hixon Fellow (Yale CIPE) — New Haven, USA *Apr 2013*
Awarded fellowship for plasma physics research at Princeton Plasma Physics Laboratory.

Yale Undergraduate Energy Scholar — New Haven, USA *2013 - 2016*
Scholar in Yale College's Energy Studies interdisciplinary program.

Yale Light Fellow (Yale Light Fellowship) — New Haven, USA *2012*
Awarded fellowship for summer of intensive Chinese study at Princeton In Beijing, at Beijing Normal University.

Yale Victor Brombert Scholar — New Haven, USA *2012*
Named scholarship for outstanding academic achievement at Yale College over academic year 2011 - 2012.

Prime Minister's Global Fellow, British Council — London, UK *2010*

Royal Economic Society Young Economist of the Year Shortlist, Royal Economic Society — London, UK *2010*

Conference Presentations

J. Parisi, et al. ***Poloidally inhomogeneous electron temperature gradient turbulence in JET-ILW pedestals*****, APS Plasma Physics Meeting 2020, October 2020 (Oral)**

J. Parisi, et al. ***Toroidal and Slab ETG Dominance in the Linear Spectrum of JET-ILW Pedestals*****, IPP Garching Pedestal TSVV Midterm Meeting, February 2020 (Oral)**

J. Parisi, et al. ***Toroidal and Slab ETG Dominance in the Linear Spectrum of JET-ILW Pedestals*****, APS Plasma Physics Meeting 2019, October 2019 (Oral)**

J. Parisi, et al. ***Toroidal and Slab ETG Dominance in the Linear Spectrum of JET-ILW Pedestals*****, European Fusion Theory Conference, October 2019 (Oral)**

J. Parisi, et al. ***Dominance of Toroidal and Slab ETG in the Linear Spectrum of JET-ILW Pedestals*****, Wolfgang Pauli Institute, Vienna, Plasma Kinetics Working Meeting, July 2019 (Oral)**

J. Parisi, et al. ***Toroidal and Slab ETG Dominance in JET Pedestals*****, Princeton Sherwood Theory Conference 2019, April 2019 (Poster)**

J. Parisi, F. I. Parra, M. Barnes, C.M. Roach, C. Giroud ***Electron-driven modes in JET fusion pedestals*****, Madrid Gyrokinetics Meeting, September 2018 (Oral)**

J. Parisi, F. I. Parra, M. Barnes, C.M. Roach ***Extending critical balance to ITG-driven turbulence with flow shear in fusion plasmas*****, 17th European Fusion Theory Conference, September 2017 (Poster)**

J. Parisi, D. Poland ***Optimizing the Conformal Bootstrap*****, Yale STARS II Symposium April 2016 (Oral)**

J. Parisi, P. Natarajan ***Redefining Galaxy Groups Using the Illustris Simulation*****, APS April Meeting April 2016 (Poster)**

J. Parisi, F. I. Parra, M. Barnes, C. Roach ***Dependence of Turbulence Spatial Correlation Lengths on Plasma Rotation*****, APS Plasma Physics Meeting November 2015 (Poster)**

V. Narayan, J. Parisi, D. Poland ***Optimizing the Conformal Bootstrap*****, APS April Meeting April 2015 (Oral)**

J. Parisi, I. Dodin, N.J. Fisch ***Current Drive in a Weakly Ionised Plasma Using Sound Waves*****, Princeton Plasma Physics Laboratory, August 2013 (Poster)**

Non-Peer Reviewed Publications

J. Ball, J. Parisi ***If we persist, we will succeed, Fusion in Europe*****, September 2018**

J. Parisi ***From Fission to Fusion: The Need for a Quick Transition, Bulletin of the Atomic Scientists*****, August 2014**

J. Parisi ***Op-Ed: China's Scientific Emergence, China Hands Journal*****, November 2013**

J. Parisi ***China's Acquisition of Nuclear Weapons (in Mandarin), Yale Accent*****, February 2013**

J. Parisi ***U.S. Energy Policy and the Power of Lobbying, The Politic*****, December 2011**

Teaching Experience

Theoretical Physics Department, University of Oxford — Oxford, UK *Jan - Apr 2019*
Non-Stipendary Lecturer

Gave tutorials to students on fourth year MMathPhys course: Collisionless Plasma Physics.

St John's College, Oxford — Oxford, UK *Jan - Jun 2019*
Non-Stipendary Lecturer

Gave tutorials and exam review sessions to third year Physics undergraduates: General Relativity.

The Queen's College, Oxford — Oxford, UK *2018 - 2019*
Non-Stipendary Lecturer

Gave tutorials and exam review sessions to third year Physics undergraduates: Fluids, Flows, and Complexity.

University of Oxford UNIQ Physics Summer School — Oxford, UK *Jul 2018, Jul 2019*
Tutor

Gave Physics tutorial sessions to students attending the summer school, who are from underrepresented socioeconomic backgrounds.

Merton College Graduate Mentoring — Oxford, UK *2016 - 2020*
Physics Graduate Mentor

Taught Merton College undergraduates multiple areas of physics: Mathematical Methods, Special Relativity, Fluids, Flows, and Complexity, General Relativity, and Quantum Field Theory.

Yale Science and Quantitative Reasoning Center — New Haven, USA *2014 - 2016*
Physics and Mathematics Tutor

Tutored Yale College students in Physics and Mathematics.

Splash at Yale; Splash at Oxford — New Haven, USA; Oxford, UK *2013 - 2019*
Teacher, Teaching Officer

Taught short courses in the following subjects: The Standard Model, Introduction to Plasma Physics, Black Holes, Introduction to Chinese Character Etymology, Introduction To General Relativity, Introduction To Hamiltonian and Lagrangian Mechanics, Introduction To Representation Theory, Introduction To Nuclear Physics, Introduction To Quantum Mechanics and Quantum Computing, The Physics of Music.

Skills

Languages: English (native), **Mandarin** (near fluent), **Classical Chinese** (advanced), **French** (intermediate), **Italian** (elementary).
Programming: Experienced with C/C++, Python, Fortran, Mathematica, MATLAB, LaTeX, Gnuplot, OSX, Linux.
Sport: Triathlon, gliding (motorless flight).

Academic Advising Experience

Theoretical Physics Department, University of Oxford — Oxford, UK *2020 - Present*

Co-supervising a Ph.D student on non-interpolating semi-Lagrange numerical algorithms and electromagnetic effects for the gyrokinetic code stella.

Theoretical Physics Department, University of Oxford — Oxford, UK *2019 - 2020*

Co-supervised a Masters student's thesis project on toroidal electron temperature gradient turbulence in stellarators.

Public Outreach

Provocative Enlightenment — Washington, USA *Nov 2020*

Radio interview on fusion energy.

Voices From the Rabbit Hole — Caracas, Venezuela *Aug 2020*

Podcast interview on fusion energy.

Tommy's Podcast — Charlotte, USA *Apr, Jun 2020*

Podcast interview on fusion energy.

Physical Attraction — Oxford, UK *Aug 2019*

Podcast interview on fusion energy.

Omega Tau — Oxford, UK *Feb 2019*

Podcast interview on fusion energy.

Splash at Oxford — Oxford, UK *2018 - 2019*

In Our Spare Time — Oxford, UK *May 2017*

Podcast interview on fusion energy.

Splash at Yale, Sprout at Yale — New Haven, US *2013 - 2016*

University Service and Organizations

Oxford University Gliding Club — Oxford, UK *2020 - Present*
COVID Officer

Coordinate matters related to flight worthiness and COVID measure for the gliding club.

University of Oxford Theoretical Physics Computing Committee — Oxford, UK *2018 - 2020*
Graduate Student Committee Member

Participated in termly meetings on departmental computing matters.

University of Oxford Physics Admissions — Oxford, UK *Nov 2016*
Physics Graduate Assistant

Evaluated University of Oxford Undergraduate Physics entrance examinations.

Yale Information Technology Services — New Haven, USA *Jan 2012 - Aug 2015*
Student Technology Assistant

Term-time student job. Troubleshooted software and hardware issues on personal computing devices. Created original solutions to challenging problems. Worked ten hours per week.

Yale Light Fellowship Student Advisory Committee — New Haven, USA *Sep 2014 - Aug 2015*
Chinese Representative

Introduced prospective applicants to Light Fellowship opportunities. Organized alumni reunions, advised fellowship awardees.

China Hands — New Haven, USA *Mar 2013 - Oct 2014*
Politics and Diplomacy Editor (Mar - Oct 2013), China Hands Journal Editor Oct 2013 - Aug 2014

Organized the Politics and Diplomacy section in China Hands, edited essay submissions. Spearheaded magazine and journal expansion in China. Editor responsible for organization of new journal, China Hands Journal.

Global Zero — New Haven, Washington, USA *Sep 2011 - Sep 2014*
Global Zero Yale Chapter Co-President (2012 - 2013)

Organized international conference with 400 attendees at Yale: Reaching Zero, the next phase in Global Nuclear Weapons Elimination. Travelled to Brussels to deliver and discuss legislation for first European Nuclear Weapon abolition bill to the European Parliament.

Yale Politic — New Haven, USA *Oct 2011 - Sep 2013*
Senior Writer and Interviewer

Contributor to Yale Politic Journal. Interviewed US Ambassador to South Korea, US Ambassador to Brunei, US Ambassador to Kyrgyzstan for Ambassador Interview series, now featured in a book, *Diplomatic Discourse*.

Yale Department of Mathematics — New Haven, USA *Jan 2012 - May 2012*
Graduate Teaching Evaluator

Evaluated the teaching of eight graduate mathematics students in a series of sixteen lectures. Provided feedback and set targets for future teaching development.

International Experience

Inter-University Programme for Chinese Studies (IUP) — Beijing, China *Aug 2013 - Jun 2014*

Student at the Inter-University Programme for intensive Chinese studies at Tsinghua University. Key study areas include Advanced Modern Chinese, Classical Chinese, and Scientific Chinese.

Princeton In Beijing — Beijing, China *Jun 2012 - Aug 2012*

Intensive Mandarin course, organized by Princeton University and run at Beijing Normal University.

Deloitte — Paris, France *May 2012 - Jun 2012*
Consultant (Energy and Resources)

Provided advice for client developing iron ore mine in Guinea. Analyzed macro-economic impact of mine, and worked with partners, the World Bank and investors, ensuring mine provided significant social returns.

Deloitte — London, UK *Sep 2010 - Apr 2011*
Deloitte Scholar

The Deloitte Scholar Scheme is a Gap Year scheme, in which 40 Scholars are selected for a 7-month placement in a graduate role and for subsequent sponsorship during University study.

Tata Medical Center — Kolkata, India *Apr 2011 - May 2011*
Research and Outreach Intern

Compiled and researched key information on cancer treatment provision in East India.

British Council — Beijing, Shanghai, Nanjing, China *Jun 2010 - Aug 2010*
Prime Minister's Global Fellow

The Prime Minister's Global Fellowship is a programme where 100 Global Fellows are selected to investigate the effects of globalization by traveling to three BRIC economies: Brazil, India and China.