

# Adrian E. Fraser

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## Affiliations and Education

2020–Present	<b>University of California, Santa Cruz</b> Postdoc, Applied Mathematics PI: Pascale Garaud
2014–2020	<b>University of Wisconsin-Madison</b> Ph.D., Physics (Plasma) Advisors: Paul W. Terry, Ellen G. Zweibel Graduation date: Aug 23, 2020
2010–2014	<b>University of Oregon</b> B.S., Physics (with honors), Mathematics

## Refereed Publications

June 2017	<b>A.E. Fraser</b> , P.W. Terry, E.G. Zweibel, and M.J. Pueschel, <i>Coupling of damped and growing modes in unstable shear flow</i> , Physics of Plasmas <b>24</b> , 062304 <a href="#">DOI</a> <a href="#">ADS</a> - Designated as a Phys. Plasmas <b>Editor's Pick</b>
December 2018	<b>A.E. Fraser</b> , M.J. Pueschel, P.W. Terry, and E.G. Zweibel, <i>Role of stable modes in driven shear-flow turbulence</i> , Physics of Plasmas <b>25</b> , 122303 <a href="#">DOI</a> <a href="#">ADS</a> - Designated as a Phys. Plasmas <b>Featured Article</b> - Selected for an AIP Scilight article ( <a href="https://aip.scitation.org/doi/10.1063/1.5083843">https://aip.scitation.org/doi/10.1063/1.5083843</a> ) - UW press release ( <a href="https://news.wisc.edu/taming-turbulence-seeking-to-make-complex-simulations-a-breeze/">https://news.wisc.edu/taming-turbulence-seeking-to-make-complex-simulations-a-breeze/</a> )
February 2021	<b>A.E. Fraser</b> , P.W. Terry, E.G. Zweibel, M.J. Pueschel, and J.M. Schroeder, <i>The impact of magnetic fields on momentum transport and saturation of shear-flow instability by stable modes</i> , Physics of Plasmas <b>28</b> , 022309 <a href="#">DOI</a> <a href="#">ADS</a> - Designated as a Phys. Plasmas <b>Editor's Pick</b>

## Honors, Awards, and Scholarships

2019	<b>Karl Guthe Jansky &amp; Alice Knapp Jansky Fellowship for Physics &amp; Astronomy</b> , University of Wisconsin-Madison, Department of Physics <i>Annual award given to outstanding graduate student in Physics or Astronomy</i> ( <a href="http://www.physics.wisc.edu/awards">http://www.physics.wisc.edu/awards</a> )
2018	<b>Exceptional Service Award</b> , University of Wisconsin-Madison <i>Campus-wide TA award, nominated by the Physics department</i> ( <a href="https://grad.wisc.edu/teaching-assistant-awards/">https://grad.wisc.edu/teaching-assistant-awards/</a> )
2017	<b>Student Poster Prize</b> , Sherwood Fusion Theory Conference ( <a href="http://www.sherwoodtheory.org/sw2018/poster_awards.php">http://www.sherwoodtheory.org/sw2018/poster_awards.php</a> )
2015	<b>Piore Award</b> , University of Wisconsin-Madison, Department of Physics <i>Annual award given for academic achievement in early stage of the Ph.D. program</i> ( <a href="http://www.physics.wisc.edu/awards">http://www.physics.wisc.edu/awards</a> )
2014	<b>Van Vleck Fellowship</b> , University of Wisconsin-Madison, Department of Physics <i>Awarded to incoming Ph.D. students with outstanding undergraduate records</i> ( <a href="http://www.physics.wisc.edu/awards">http://www.physics.wisc.edu/awards</a> )
2013	<b>Weiser Undergraduate Teaching Award</b> , University of Oregon, Department of Physics
2013	<b>Science Literacy Program Scholar</b> , University of Oregon <i>Co-instructed PHYS 155, a special topics elective for non-physics majors</i> ( <a href="https://scilit.uoregon.edu/">https://scilit.uoregon.edu/</a> )
2011	<b>Dean's List</b> , University of Oregon ( <a href="https://advising.uoregon.edu/content/academic-honors">https://advising.uoregon.edu/content/academic-honors</a> )
2010-2013	<b>Scholarships for Oregon Scientists</b> , University of Oregon ( <a href="https://sciencescholars.uoregon.edu/">https://sciencescholars.uoregon.edu/</a> )

## Successful Computing Allocation Requests (Co-) Authored

2021	<b>Momentum transport by shear-flow-driven turbulence in stars</b> , XSEDE computing resources, NSF (education allocation) PI: <b>A.E. Fraser</b>
2018-2019	<b>Role of Stable Eigenmodes in Shear-flow MHD Turbulence</b> , XSEDE computing resources, NSF (start-up allocation) <b>Lead author on proposal</b> , but not listed as PI due to XSEDE policy Resources awarded: approx. 200,000 CPU-hours PI: P.W. Terry, Co-PIs: <b>A.E. Fraser</b> , M.J. Pueschel, E.G. Zweibel
2017-2018 & 2018-2019	<b>Gyrokinetic Plasma Microturbulence Simulation in Fusion and Basic Plasmas</b> , XSEDE computing resources, NSF (research allocation) Contributed to proposal, but the lead author was the PI Resources awarded: approx. 6,750,000 (2018-2019) & 11,300,000 (2017-2018) CPU-hours PI: M.J. Pueschel, Co-PIs: <b>A.E. Fraser</b> , P.W. Terry, Z.R. Williams, S.-W. Tsao

## Selected Presentations

Jun 2021	“MHD effects on thermohaline mixing in stars: the problem with parasites” - UW-Madison Astronomy, Monday Science Seminar series
Apr 2021	“MHD effects on thermohaline mixing in stars: the problem with parasites” - Flatiron Institute CCA, Stars & Compact Objects group meeting
Mar 2021	“Capturing negative turbulent viscosity in reduced models of unstable shear flows” - Invited talk at ‘Staircase21’ KITP meeting
Nov 2020	American Physical Society Division of Plasma Physics Meeting, remote – poster presentation
Oct 2020	“Momentum transport, dissipation, and models built from linear modes in MHD shear flows” - Astronomy Seminar, Stony Brook University
Apr 2020 ( <i>Canceled</i> )	Sherwood Fusion Theory Conference, Santa Rosa, CA – poster presentation
Oct 2019	“Saturation of Shear-flow Turbulence in Magnetized Plasmas” - American Physical Society Division of Plasma Physics Meeting, Fort Lauderdale, Florida – <b>invited talk</b>
Apr 2019	“Role of Stable Modes in the Saturation and Transport Properties of Shear Flow Turbulence” - Sherwood Fusion Theory Conference, Princeton, New Jersey – <b>invited talk</b>
Mar 2019	“Role of Stable Modes in Shear-Flow Turbulence” - Plasma Physics Seminar, University of Maryland
Oct 2018	“Role of Stable Eigenmodes in Kelvin-Helmholtz Turbulence” - Plasma Seminar, IFS, University of Texas at Austin
Nov 2018	American Physical Society Division of Plasma Physics Meeting, Portland, Oregon – poster presentation
Apr 2018	Sherwood Fusion Theory Conference, Auburn, Alabama – poster presentation
Oct 2017	American Physical Society Division of Plasma Physics Meeting, Milwaukee, Wisconsin – poster presentation
May 2017	Sherwood Fusion Theory Conference, Annapolis, Maryland – poster presentation
Oct 2016	American Physical Society Division of Plasma Physics Meeting, San Jose, California – poster presentation
Apr 2016	Sherwood Fusion Theory Conference, Madison, Wisconsin – poster presentation

## Teaching and Service

2019	Supervised an undergraduate research project: Jack Schroeder, studying how magnetic fields affect coupling to large-scale stable modes in shear flow instabilities <i>- Met weekly to discuss progress in his calculation and review underlying concepts</i>
2018-2019	Co-founder and President, Physics Graduate Student Council (PGSC) <i>Working with peers, led weekly department-wide town halls to decide on mission and structure of PGSC before serving as president for its first year. Worked with department administrators and peers on two \$1,000 professional development grants awarded by the graduate school with which we hosted seminar speakers, and secured \$4,000 in support for PGSC from the department for our first year. Worked with department and peers to restructure graduate student recruitment and orientation, address key concerns regarding the graduate program, and implement peer mentoring.</i> ( <a href="https://pgsc.physics.wisc.edu/">https://pgsc.physics.wisc.edu/</a> )
2018-2019	Graduate Program Committee Member, UW-Madison Department of Physics <i>Served as student representative on faculty committee</i> ( <a href="https://www.physics.wisc.edu/resources/committee">https://www.physics.wisc.edu/resources/committee</a> )
2014-2017	Teaching Assistant, Introductory Physics I & II for Life Sciences, UW <i>Taught four semesters total; granted ratings of “Excellent” three times and “Very Good” once by TA coordinator</i>
2010-2014	Co-instructor, instructional lab manager, Undergraduate Teaching Assistant, tutor, mentor, and peer advisor at UO and a local high school <i>The teaching activities I was involved in at UO were broad and occurred over the span of my time there; I am happy to discuss them in greater detail if asked</i>

Peer reviews: 1 for J. Plasma Phys. (2020)

## Other Experience

Summer 2021	Kavli Summer Program in Astrophysics (KSPA): Fluid Dynamics of the Sun and Stars <i>Senior participant in this research-oriented, summer-school-like program; submitted novel research projects to be chosen by interested students, leading to a collaboration with graduate student/KSPA fellow Imogen Cresswell</i>
Spring 2021	KITP Program: Layering in Atmospheres, Oceans and Plasmas
Summer 2020 (Postponed)	Kavli Summer Program in Astrophysics – Fluid Dynamics of the Sun and Stars
August 2017	Niels Bohr International Academy - Summer School on Astrophysical Plasmas, Copenhagen, Denmark
2013–2014	Imamura Group, University of Oregon <i>Worked on analytical and numerical models of accretion disks, including global fluid simulations, linear stability analyses, and radiation transport models</i>
2011–2013	Torrence Group, University of Oregon <i>Using Geant4, a Monte Carlo-based particle physics software package, developed and ran a model to test the performance of an electron energy spectrometer proposed for use in the International Linear Collider</i>