
Stefan Gregory LLEWELLYN SMITH

Address: Mechanical and Aerospace Engineering Dept.
University of California, San Diego
La Jolla, CA 92093-0411

Tel: (858) 822-3475
Fax: (858) 534-7599
E-mail: sgls@ucsd.edu

URL: <http://web.eng.ucsd.edu/~sgls>

Research interests:

- Fluid dynamics.
- Asymptotic methods.
- Applied and industrial mathematics.

Education:

- Queens' College, University of Cambridge, Oct 1993–Oct 1996. PhD research in the Department of Applied Mathematics and Theoretical Physics supervised by Professor D. G. Crighton on the topic *Vortices and Rossby-wave radiation on the beta-plane*. PhD awarded October 1996.
- Massachusetts Institute of Technology and Woods Hole Oceanographic Institution, Sep 1992–Sep 1993.
- Queens' College, University of Cambridge, Oct 1988–Jun 1992. Certificate of Advanced Study (Part III of the Mathematical Tripos) with Distinction, awarded June 1992. BA (Honours) First Class (Parts IA, IB & II), awarded June 1991.

Awards:

- Fellow, Division of Fluid Dynamics, American Physical Society, 2017.
- Outstanding Engineering Professor Award 2004, Jacobs School of Engineering, University of California, San Diego.
- First-prize winner, 2002 SIAM 100-dollar 100-digit contest.
- Chancellor's Summer Faculty Fellowship Award, 2001, University of California, San Diego.
- Hellman Fellowship 2001, University of California, San Diego.
- Faculty Career Development Program award 2001, University of California.
- Queens' College Research Fellowship, 1996–1999.
- Lindemann Trust Fellowship for post-doctoral research in the US, 1996–1997.
- Munro Studentship (for undergraduate teaching), Queens' College, 1995–1996.
- Smith Prize (mathematical essay – only category 1 prize awarded), University of Cambridge, 1995.
- Natural Environment Research Council (NERC) Studentship at the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, 1993–1996.
- Paul McDonald Fye Fellow, Woods Hole Oceanographic Institution, 1992–1993.
- College Exhibitioner, Foundation and Bachelor Scholar, Queens' College, 1989–1992.
- Bronze Medal, British Physics Olympiad, 1988.

Experience:

- Professor, Scripps Institution of Oceanography, University of California, San Diego, Jul 2017–.
- Professor, Department of Mechanical and Aerospace Engineering, University of California, San Diego, Jul 2010–.
- Adjunct Professor, Scripps Institution of Oceanography, University of California, San Diego, Jul 2010–Jun 2017.
- Adjunct Associate Professor, Scripps Institution of Oceanography, University of California, San Diego, Jul 2007–Jun 2010.
- Associate Professor, Department of Mechanical and Aerospace Engineering, University of California, San Diego, Jul 2004–Jun 2010.
- Assistant Professor, Department of Mechanical and Aerospace Engineering, University of California, San Diego, Jul 1999–Jun 2004.
- Research Fellow, Queens' College, Cambridge, Oct 1996–Sep 1999.
- Post-doctoral researcher, Scripps Institution of Oceanography, Oct 1996–Sep 1997.
- Programmer, Cambridge Environmental Research Consultants, Cambridge, summer 1991. Writing a graphical front-end to a tunnel-fire simulation program under contract to the Health and Safety Executive and Eurotunnel.
- Programmer, CGI, Paris, summer 1990. Implementing a Windows port of a mainframe software suite.
- Data Security Consultant, EDS, Paris, summer 1989. Administering computer security for a multinational corporation.

Professional Activities:

- Poste rouge CNRS, IMFT, Toulouse, 2011–2012.
- Professeur invité, Université de Paris VII (Jan 2005).
- Professeur invité, Ecole Normale Supérieure, Paris (Nov 2004).
- Royal Society Study Visit grant to visit the Department of Physics of the University of Tokyo (April 1999).
- Exchange Grant (November 1998) from the Transport Processes in the Atmosphere and the Oceans programme of the European Science Foundation to carry out research at IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer).
- Field work: Participated in testing cruise for the R/V Roger Revelle, August 1996.
- Editor, Euromech Newsletter, 1995–1996.
- Supervised first, second and third year, and Part III (graduate level) applied mathematics courses for Queens', Sidney Sussex, Christ's and St. Edmund's Colleges, Cambridge. 1994–1999.
- Director of Studies in Mathematics, Clare Hall, Cambridge. 1997–1999.
- Participant in European Study Groups for Industry workshops, 1995, 1996 and 1998.
- Member of staff, WHOI GFD Summer School 1997, 1998, 1999, 2005, 2006. Co-director, 2004, 2013. Faculty, 2007–
- Referee for *J. Fluid Mech.*, *Proc. R. Soc. Lond. A*, *Math. Rev.*, *J. Phys. Oceanogr.*, *J. Acoust. Soc. Am.*, *Wave Motion*, *Phys. Fluids*, *Dyn. Atmos. Oceans*, *PAGEOPH*, *J. Mar. Res.*, *J. Eng. Math.*, *Q. J. Roy. Met. Soc.*, *J. Atmos. Ocean. Tech.*, *Cont. Shelf. Res.*, *Acoustics Research Letters Online*, *Deep-Sea Res.*, *Theor. Comp. Fluid Dyn.*, *Int. J. Eng. Sci.*, *J. Geophys. Res. Oceans*, *J. Geophys. Res. Atmos.*, *Geophys. Res. Lett.*, *Ocean Modelling*, *Eur. Phys. J. Appl. Phys.*, *Chem. Eng. Sci.*, *ASCE J. Eng. Mech.*, *Phil. Trans. R. Soc. Lond. A*, *Q. J. Mech. Appl. Math.*, *AIAA J.*, *Fluid Dyn. Res.*, *Eur. Phys. Lett.*, *J. Fluids Struct.*, *Int. J. Non-Linear Mech.*, *Physica D*, *ASME J. Fluids Eng.*, *J. Waves Electromag. Res. & Progr. Electromag. Res.*, *Proc. Natl. Acad. Sci.*, *J. Sound Vib.*, *Scientific Reports*, *PRIMUS*, *J. Nonlinear Sci.*, *Phys. Rev. Fluids*, *Phys. Lett. A*, NSF, Human Frontier Science Program, Hellenic Republic "Thalis" program, Sultan Qaboos University, New Zealand Ministry of Science and Innovation, Kazakhstan Ministry of Education and Science, South African national Research Foundation, Cambridge University Press, Elsevier Academic Press and Wiley.
- Member: American Physical Society.
- At large executive committee member, American Physical Society Division of Fluid Dynamics 2008–2011.
- Wrote *J. Fluid Mech.* Bibtex style file
(see <ftp://ftp.cup.cam.ac.uk/pub/texarchive/journals/latex/jfm-cls/bst>).
- Associate Editor, *J. Fluid Struct.* 2010–2017.
- Associate Editor, *SIAM J. Appl. Math.* 2013–2018.

-
- Editorial Advisory Board, *Q. J. Mech. Appl. Math.* 2013–2023.
 - Editorial Advisory Board, *Fluid Dyn. Res.* 2020–
 - International Organizing Committee, 2013 IUTAM Symposium on Vortex Dynamics, Fukuoka.
 - Co-organizer, Banff International Research Station workshop *Modern Applications of Complex Variables: Modeling, Theory and Computation*, January 2015.
 - Organizing Committee, Frontiers in Applied & Computational Mathematics, Newark, June 2015.
 - Co-organizer, Isaac Newton Institute Programme *Complex analysis: techniques, applications and computations*, September–December 2019.

Journal publications:

- A-1** Llewellyn Smith, S. G. 1995 The influence of circulation on the stability of vortices to mode-one disturbances. *Proc. R. Soc. Lond. A*, 451, 747–755.
- A-2** Llewellyn Smith, S. G. 1997 The motion of a non-isolated vortex on the beta-plane. *J. Fluid Mech.*, 346, 149–179.
- A-3** Pratt, L. J. & Llewellyn Smith, S. G. 1997 Hydraulically-drained flows in rotating basins. Part I: Method. *J. Phys. Oceanogr.*, 27, 2509–2521.
- A-4** Balmforth, N. J., Llewellyn Smith, S. G. & Young, W. R. 1998 Dynamics of interfaces and layers in a stratified turbulent fluid. *J. Fluid Mech.*, 355, 329–358.
- A-5** Balmforth, N. J., Llewellyn Smith, S. G. & Young, W. R. 1998 Enhanced dispersion of near-inertial waves in an idealized geostrophic flow. *J. Mar. Res.*, 56, 1–40.
- A-6** Llewellyn Smith, S. G. & Gille, S. T. 1998 Probability density functions of large-scale turbulence in the ocean. *Phys. Rev. Lett.*, 81, 5249–5252.
- A-7** Llewellyn Smith, S. G. 1999 Near-inertial oscillations of a barotropic vortex: trapped modes and time evolution. *J. Phys. Oceanogr.*, 29, 747–761.
- A-8** Llewellyn Smith, S. G. & Craster R. V. 1999 Numerical and asymptotic approaches to scattering problems involving finite elastic plates in structural acoustics. *Wave Motion*, 30, 17–41.
- A-9** Ford, R. & Llewellyn Smith, S. G. 1999 Scattering of acoustic waves by a vortex. *J. Fluid Mech.*, 386, 305–328.
- A-10** Carnevale, G. F., Llewellyn Smith, S. G., Crisciani, F., Purini, R. & Serravall, R. 1999 Bifurcation of a coastal current at an escarpment. *J. Phys. Oceanogr.*, 29, 969–985.
- A-11** Craster, R. V. & Llewellyn Smith, S. G. 1999 A class of expansion functions for finite scattering problems in structural acoustics. *J. Acoust. Soc. Am.*, 106, 3128–3134.
- A-12** Gille, S. T. & Llewellyn Smith, S. G. 2000 Velocity probability density functions from altimetry. *J. Phys. Oceanogr.*, 30, 125–136.
- A-13** Llewellyn Smith, S. G. 2000 The asymptotic behaviour of Ramanujan’s integral and its application to two-dimensional diffusion-like equations. *Eur. J. Appl. Math.*, 11, 13–28.
- A-14** Llewellyn Smith, S. G. 2000 Energy and pseudomomentum of propagating disturbances on the beta-plane. *Dyn. Atmos. Oceans*, 32, 135–151.
- A-15** Balmforth, N. J., Llewellyn Smith, S. G. & Young, W. R. 2001 Disturbing vortices. *J. Fluid Mech.*, 426, 95–133.
- A-16** Moehlis, J. & Llewellyn Smith, S. G. 2001 Radiation of mixed layer near-inertial oscillations. *J. Phys. Oceanogr.*, 31, 1550–1560.
- A-17** Llewellyn Smith, S. G. & Ford, R. 2001 Three-dimensional acoustic scattering by vortical flows. Part I: General theory. *Phys. Fluids.*, 13, 2876–2889.

-
- A-18** Llewellyn Smith, S. G. & Ford, R. 2001 Three-dimensional acoustic scattering by vortical flows. Part II: Axisymmetric scattering by Hill's spherical vortex. *Phys. Fluids.*, 13, 2890–3000.
- A-19** Klein, P. & Llewellyn Smith, S. G. 2001 Horizontal dispersion of near-inertial oscillations in a turbulent mesoscale eddy field. *J. Mar. Res.*, 59, 697–723.
- A-20** Llewellyn Smith, S. G. 2002 Scattering of acoustic waves by a superfluid vortex. *J. Phys. A.*, 35, 3597–3607.
- A-21** Llewellyn Smith, S. G. & Young, W. R. 2002 Conversion of the barotropic tide. *J. Phys. Oceanogr.*, 32, 1554–1566.
- A-22** Hattori, Y. & Llewellyn Smith, S. G. 2002 Axisymmetric acoustic scattering by vortices. *J. Fluid Mech.*, 473, 275–294.
- A-23** Gille, S. T., Llewellyn Smith, S. G. & Lee, S. M. 2003 Measuring the sea breeze from QuikSCAT scatterometry. *Geophys. Res. Lett.*, 30, 1114.
- A-24** Llewellyn Smith, S. G. & Young, W. R. 2003 Tidal conversion at a very steep ridge. *J. Fluid Mech.*, 495, 175–191.
- A-25** Llewellyn Smith, S. G. & Tobias, S. M. 2004 Vortex dynamos. *J. Fluid Mech.*, 498, 1–21.
- A-26** Llewellyn Smith, S. G. 2004 Rotating stratified edge waves. *J. Fluid Mech.*, 498, 161–170.
- A-27** Klein, P., Llewellyn Smith, S. G. & Lapeyre, G. 2004 Organization of inertial energy by an eddy field. *Q.J. Royal. Met. Soc.*, 130, 1153–1166.
- A-28** Gille, S. T., Llewellyn Smith, S. G. & Stom, N. M. 2005 Global observations of the land breeze. *Geophys. Res. Lett.*, 32, L05605.
- A-29** Conroy, D. T., Llewellyn Smith, S. G. & Caulfield, C. P. 2005 Evolution of a chemically reacting plume in a ventilated room. *J. Fluid Mech.*, 537, 221–253.
- A-30** Petrelis, F., Llewellyn Smith, S. G. & Young, W. R. 2006 Tidal conversion at a submarine ridge. *J. Phys. Oceanogr.*, 36, 1053–1071.
- A-31** Di Lorenzo, E., Llewellyn Smith, S. G. & Young, W. R. 2006 Numerical and analytical estimates of M_2 tidal conversion at steep oceanic ridges. *J. Phys. Oceanogr.*, 36, 1072–1084.
- A-32** Adda-Bedia, M. & Llewellyn Smith, S. G. 2006 Supersonic and subsonic states of dynamic contact between elastic bodies. *Proc. R. Soc. Lond. A.*, 462, 2781–2795.
- A-33** Davis, A. M. J. & Llewellyn Smith, S. G. 2006 Perturbation of eigenvalues due to gaps in 2-D boundaries. *Proc. R. Soc. Lond. A.*, 463, 759–782.
- A-34** Urzay, J., Llewellyn Smith, S. G. & Glover, B. J. 2007 The elastohydrodynamic force on a sphere near a soft wall. *Phys. Fluids.*, 19, 103106.
- A-35** Adamou, A. T. I., Craster, R. V. & Llewellyn Smith, S. G. 2007 Trapped edge waves in stratified rotating fluids: Numerical and asymptotic results. *J. Fluid Mech.*, 592, 192–220.
- A-36** Abrahams, I. D., Davis, A. M. J. & Llewellyn Smith, S. G. 2008 Matrix Wiener–Hopf approximation for a partially clamped plate. *Q.J. Mech. Appl. Math.*, 61, 241–265.

-
- A-37** Abrahams, I. D., Davis, A. M. J. & Llewellyn Smith, S. G. 2008 Asymmetric channel divider in Stokes flow. *SIAM J. Appl. Math.*, 68, 1439–1463.
- A-38** Llewellyn Smith, S. G., Michelin, S. & Crowdy, D. G. 2008 The dipolar field of rotating bodies in two dimensions. *J. Fluid Mech.*, 607, 109–118.
- A-39** Conroy, D. T. & Llewellyn Smith, S. G. 2008 Endothermic and exothermic chemically-reacting plumes. *J. Fluid Mech.*, 612, 291–310.
- A-40** Michelin, S., Llewellyn Smith, S. G. & Glover, B. J. 2008 Vortex shedding model of a flapping flag. *J. Fluid Mech.* 617, 1–10.
- A-41** Llewellyn Smith, S. G. & Davis, A. M. J. 2009 Time-dependence of groundwater pumping from a well near a river. *Proc. R. Soc. Lond. A*, 465, 175–192.
- A-42** Michelin, S. & Llewellyn Smith, S. G. 2009 An unsteady point vortex method for coupled fluid-solid problems. *Theor. Comp. Fluid Dyn.* 23, 127–153.
- A-43** Urzay, J., Llewellyn Smith, S. G., Thomson, E. P. & Glover, B. J. 2009 Wind gusts and plant aeroelasticity effects on the aerodynamics of pollen shedding: a hypothetical turbulence-initiated wind-pollination mechanism. *J. Theor. Biol.*, 259, 785–792.
- A-44** Michelin, S. & Llewellyn Smith, S. G. 2009 Resonance and propulsion performance of a heaving flexible wing. *Phys. Fluids*, 21, 071902.
- A-45** Michelin, S. & Llewellyn Smith, S. G. 2009 Linear stability analysis of coupled parallel flexible plates in an axial flow. *J. Fluids Struct.*, 25, 1136–1157.
- A-46** Michelin, S. & Llewellyn Smith, S. G. 2010 Falling cards and flapping flags: understanding fluid-solid interactions using an unsteady point vortex model. *Theor. Comp. Fluid Dyn.*, 24, 195–200.
- A-47** Davis, A. M. J. & Llewellyn Smith, S. G. 2010. Tangential oscillations of a circular disk in a viscous stratified fluid. *J. Fluid Mech.*, 656, 342–359.
- A-48** Yeh, H.-D., Wang, C.-T. & Llewellyn Smith, S. G. 2010 Examining the large-time wellbore flux of constant head test. *Water Resour. Res.*, 46, W09602.
- A-49** Llewellyn Smith, S. G. & Davis, A. M. J. 2010 The split ring resonator. *Proc. R. Soc. Lond. A*, 466, 3117–3134.
- A-50** Garai, A., Kleissl, J. & Llewellyn Smith, S. G. 2010 Estimation of biomass heat storage using thermal infrared imagery: application to a walnut orchard. *Boundary-Layer Meteorol.*, 137, 333–342.
- A-51** Martin, D. T., Sandoval, S., Carter, A., Rodwell, M., Llewellyn Smith, S. G., Kummel, A. C. & Messmer, D. 2011 Fabrication of silicon on borosilicate glass microarrays for quantitative live cell imaging. *MRS Proceedings*, 1346, mrss11-1346-aa04-02.
- A-52** Llewellyn Smith, S. G. 2011 How do singularities move in potential flow? *Physica D*, 240, 1644–1651.

-
- A-53** Llewellyn Smith, S. G. 2011 A conundrum in conversion. *J. Fluid Mech.*, 684, 1–4.
- A-54** Martin, P. A. & Llewellyn Smith, S. G. 2011 Generation of internal gravity waves by an oscillating horizontal disc. *Proc. R. Soc. Lond. A*, 467, 3406–3423.
- A-55** Llewellyn Smith, S. G. & Crowdy, D. G. 2012 Structure and stability of hollow vortex equilibria. *J. Fluid Mech.*, 691, 178–200.
- A-56** Martin, P. A. & Llewellyn Smith, S. G. 2012 Internal gravity waves, boundary integral equations and radiation conditions. *Wave Motion*, 49, 427–444.
- A-57** Llewellyn Smith, S. G. & Hattori, Y. 2012 Axisymmetric magnetic vortices with swirl. *Commun. Nonlinear Sci. Numer. Simulat.*, 17, 2101–2107.
- A-58** Martin, P. A. & Llewellyn Smith, S. G. 2012 Generation of internal gravity waves by an oscillating horizontal elliptical plate. *SIAM J. Appl. Math.*, 72, 725–739.
- A-59** Thompson, E. P., Llewellyn Smith, S. G. & Glover, B. J. 2012 An Arabidopsis rhomboid protease has roles in the chloroplast and in flower development. *J. Exp. Botany*, 63, 2559–2570.
- A-60** Crowdy, D. G., Llewellyn Smith, S. G. & Freilich, D. V. 2013 Translating hollow vortex pairs. *Eur. J. Mech. B/Fluids.*, 37, 180–186.
- A-61** Hattori, Y. & Llewellyn Smith, S. G. 2013 Motion of axisymmetric magnetic eddies with swirl. *Procedia IUTAM*, 7, 243–250.
- A-62** Llewellyn Smith, S. G. & Nagem, R. J. 2013 Vortex pairs and dipoles. *Reg. Chaotic Dyn.*, 18, 194–201.
- A-63** Barkan, R., Winters, K. B. & Llewellyn Smith, S. G. 2013 Rotating horizontal convection. *J. Fluid Mech.*, 723, 556–596.
- A-64** Davis, A. M. J. & Llewellyn Smith, S. G. 2014 Three-dimensional corner eddies in Stokes flow. *Fluid Dyn. Res.*, 46, 015509.
- A-65** Gille, S. T. & Llewellyn Smith, S. G. 2014 When land breezes collide: Converging diurnal winds over small bodies of water. *Q. J. Roy. Met. Soc.*, 140, 2573–2581.
- A-66** Llewellyn Smith, S. G. 2014 Desingularized propagating vortex equilibria. *Fluid Dyn. Res.*, 46, 06141.
- A-67** Barkan, R., Winters, K. B. & Llewellyn Smith, S. G. 2015 Energy cascades and loss of balance in a re-entrant channel forced by wind stress and buoyancy fluxes. *J. Phys. Oceanogr.*, 45, 272–293.
- A-68** Konopliv, N. A., Llewellyn Smith, S. G., McElwaine, J. N. & Meiburg, E. 2016 Modeling gravity currents without an energy closure. *J. Fluid Mech.*, 789, 806–829.
- A-69** Wu, Y., Llewellyn Smith, S. G., Rottman, J. W., Broutman, D & Minster, J.-B. H. 2016 The propagation of tsunami-generated acoustic-gravity waves in the atmosphere. *J. Atmos. Sci.*, 73, 3025–3036.

-
- A-70** Davis, A. M. J. & Llewellyn Smith, S. G. 2016 Instability of a vortex sheet leaving a right-angled wedge. *J. Fluid Mech.*, 803, 1–17.
- A-71** Johnson, E. R. & Llewellyn Smith, S. G. 2016 On the slow motion of a spheroid in a rotating stratified fluid. *J. Fluid Mech.*, 808, R4.
- A-72** Taylor, C. K. & Llewellyn Smith, S. G. 2016 Dynamics & transport properties of three surface quasigeostrophic point vortices. *Chaos*, 26, 113117.
- A-73** Zannetti, L., Ferlauto, M. & Llewellyn Smith, S. G. 2016 Hollow vortices in shear. *J. Fluid Mech.*, 809, 705–715.
- A-74** van der Wiel, K., Gille, S. T., Llewellyn Smith, S. G., Linden, P. F. & Cenedese, C. 2017 Characteristics of colliding sea breeze gravity current fronts: a laboratory study. *Q.J. Roy. Met. Soc.*, 143, 1434–1441.
- A-75** Freilich, D. G. & Llewellyn Smith, S. G. 2017. The Sadovskii vortex in strain. *J. Fluid Mech.*, 825, 479–501.
- A-76** Llewellyn Smith, S. G. 2018 A note on “Quasi-analytical solution of two-dimensional Helmholtz equation”. *Appl. Math. Modelling*, 54, 281–283.
- A-77** Rypina, I. I., Llewellyn Smith, S. G. & Pratt, L. J. 2018 Connection between encounter volume and diffusivity in geophysical flows. *Nonlin. Proc. Geophys.*, 25, 267–289.
- A-78** Cumberbatch, E. & Llewellyn Smith, S. G. 2018 Current/Voltage characteristics of the short-channel double-gate transistor. Part I. *SIAM J. Appl. Math.*, 78, 877–896.
- A-79** Gagniere, S., Llewellyn Smith, S. G. & Yeh, H.-D. 2018 Excess pore water pressure due to ground surface erosion. *Appl. Math. Modelling*, 61, 72–82.
- A-80** Luca, E. & Llewellyn Smith, S. G. 2018 Stokes flow through a two-dimensional channel with a linear expansion. *Q.J. Mech. Appl. Math.*, hby013.
- A-81** Llewellyn Smith, S. G., Chang, C., Chu, T., Blyth, M., Hattori, Y. & Salman H. 2018 Generalized contour dynamics: a review. *Reg. Chaotic. Dyn.*, 23, 507–518.
- A-82** Chang, C. & Llewellyn Smith, S. G. 2018 The motion of a buoyant vortex filament. *J. Fluid Mech.*, 857, R4.
- A-83** Matusik, K. E. & Llewellyn Smith, S. G. 2019 The response of surface buoyancy flux-driven convection to localized mechanical forcing. *Experiments in Fluids*, 60, 79.
- A-84** Llewellyn Smith, S. G. & Luca, E. 2019 Numerical solution of scattering problems using a Riemann–Hilbert formulation. *Proc. R. Soc. A*, 475, 20190105.
- A-85** Llewellyn Smith, S. G. & Hattori, Y. 2019 Generation of bulk vorticity and current density in current-vortex sheet model. *High Energy Density Physics*, 33, 100712.

-
- A-86** Zhang, Y. Llewellyn Smith, S. G., Zhang, T. & Li, T. 2019 A Lagrangian approach for computational acoustics with particle-based method. *Engineering Analysis with Boundary Elements*, 108, 459–471.
- A-87** Rocha, C., Bossy, T., Llewellyn Smith, S. G. & Young, W. R. 2020 Improved bounds on horizontal convection. *J. Fluid Mech.*, 883, A41.
- A-88** Lahaye, N. & Llewellyn Smith, S. G. 2020 Modal analysis of internal wave propagation and scattering over large-amplitude topography. *J. Phys. Oceanogr.*, 50, 305–321.
- A-89** Wu, Y., Llewellyn Smith, S. G., Rottman, J. W., Broutman, D. & Minster, J.-B. H. 2020 Time-Dependent Propagation of Tsunami-Generated Acoustic-Gravity Waves in the Atmosphere. *J. Atmos. Sci.*, 77, 1233–1244.
- A-90** Chang, C. & Llewellyn Smith, S. G. 2020 Axisymmetric contour dynamics for buoyant vortex rings. *J. Fluid Mech.*, 887, A28.
- A-91** Stolerman, L. M., Getz, M., Llewellyn Smith, S. G., Holst, M. & Rangamani, P. 2020 Stability analysis of a bulk-surface reaction model for membrane-protein clustering. *Bull. Math. Biol.*, 82, 30.
- A-92** Hernández, E. S., Llewellyn Smith, S. G. & Cros, A. 2020 Resonance of a flexible plate immersed in a von Kármán vortex street. *J. Mech. Sci. Tech.*, 34, 1459–1465.
- A-93** Rocha, C., Constantinou, N., Llewellyn Smith, S. G. & Young, W. R. 2020 The Nusselt numbers of horizontal convection. *J. Fluid Mech.*, 894, A24.
- A-94** Chang, C. & Llewellyn Smith, S. G. 2021 Density and surface tension effects on vortex stability. Part 1. Curvature instability. *J. Fluid Mech.*, 913, A14.
- A-95** Chang, C. & Llewellyn Smith, S. G. 2021 Density and surface tension effects on vortex stability. Part 2. Moore–Saffman–Tsai–Widnall instability. *J. Fluid Mech.*, 913, A15.
- A-96** Christopher, T. & Llewellyn Smith, S. G. 2021 Hollow vortex in a corner. *J. Fluid Mech.*, 908, R2.
- A-97** Christopher, T. W. & Llewellyn Smith, S. G. 2021 Bounding temperature dissipation in time-modulated Rayleigh–Bénard convection. *Phys. Rev. Fluids*, 6, L051501.
- A-98** Protas, B., Llewellyn Smith, S. G. & Sakajo, T. 2021 Finite rotating and translating vortex sheets. *J. Fluid Mech.*, 923, A23.
- A-99** Lahaye, N., Paci, A. & Llewellyn Smith, S. G. 2021 Instability of lenticular vortices: Results from laboratory experiments, linear stability analysis and numerical simulations. *Fluids*, 6, 380.
- A-100** Chu, T. & Llewellyn Smith, S. G. 2021 Helical contour dynamics. *Reg. Chaotic Dyn.*, 26, 600–617.

Other publications:

- B-1** Llewellyn Smith, S. G. 1996. Vortices and Rossby-wave radiation on the beta-plane. Ph.D. Thesis. University of Cambridge.
- B-2** 29th European Study Group with Industry. Mathematical Institute, Oxford University. Final Report.
- B-3** 30th European Study Group with Industry. Department of Mathematics, University of Southampton. Final Report.
- B-4** Hattori, Y. & Llewellyn Smith, S. G. 2001 Numerical Study of Sound Scattering by a Vortex Ring. *Proceedings of the first International Symposium on Advanced Fluid Information*, 445–450.
- B-5** Kunze, E. & Llewellyn Smith, S. G. 2004 The Role of Smallscale Topography and Turbulent Mixing in the Global Ocean. *Oceanography*, 17-1.
- B-6** Scott, E. C., . . . , Llewellyn Smith, S. G. *et al.* 2004 The morphology of Steve. *Ann. Improbable Res.*, July / August, 24–29.
- B-7** Llewellyn Smith, S. G. 2009 Fluid instability, the continuous spectrum and asymptotic models & Vortex axisymmetrization. Kyushu University Workshop *Math-for-Industry Tutorial: Spectral theories of non-Hermitian operators and their application*. COE Lecture Note Vol. 20: Kyushu University.
- B-8** Cenedese, C. C., Chassignet, E. P. & Llewellyn Smith, S. G. eds. 2013 *Buoyancy-Driven Flows* Geophysical 2013 Fluid Dynamics Summer Study Program, Woods Hole Oceanographic Institution.

Conference talks and posters:

- Llewellyn Smith, S. G. Deflection of a geostrophic current on a slope. British Applied Mathematics Conference. Sheffield, March 1994.
- Llewellyn Smith, S. G. Motion of a non-isolated vortex on the beta-plane. European Geophysical Society annual meeting, The Hague, April 1995.
- Llewellyn Smith, S. G. Entrainment by vortices. ERCOFTAC Workshop on Mixing in Geophysical Flows II. Vilanova i la Geltru (Barcelona), March 1997.
- Llewellyn Smith, S. G. & Craster, R. V. Asymptotic and numerical methods in wave propagation. British Applied Mathematics Conference. Edinburgh, April 1997.
- Llewellyn Smith, S. G. Near-inertial oscillations of a barotropic vortex. American Geophysical Union, 1998 Ocean Sciences Meeting. San Diego, February 1998.
- Llewellyn Smith, S. G. Dynamics of interfaces and layers in a stratified turbulent fluid. Transport in the Oceans and Atmosphere. Porto, April 1998.
- Balmforth, N. J., S. G. Llewellyn Smith & W. R. Young. Dynamics of interfaces and layers in a stratified turbulent fluid. European Geophysical Society annual meeting, Nice, April 1998.
- Llewellyn Smith, S. G. & Ford, R. The scattering of waves by a vortex in a stratified medium. American Meteorological Society, 12th Conference on Atmospheric and Oceanic Fluid Dynamics. New York, June 1999.
- Balmforth, N. J., Llewellyn Smith, S. G. & Young, W. R. 2001 Disturbing vortices. American Physical Society, Division of Fluid Dynamics. New Orleans, November 1999.
- Llewellyn Smith, S. G. Scattering by Hill's vortex. American Physical Society, Division of Fluid Dynamics. New Orleans, November 1999.
- Llewellyn Smith, S. G. & Ford, R. Three-dimensional acoustic scattering by vortical flow. 'Sound-flow interaction' summer school, Cargèse, June 2000.
- Llewellyn Smith, S. G. & Ford, R. Acoustic scattering by vortices in the Born limit. IC-TAM2000, Chicago, August 2000.
- Llewellyn Smith, S. G. & Klein, P. Horizontal dispersion of near-inertial oscillations in a turbulent mesoscale. American Physical Society, Division of Fluid Dynamics. Washington DC, November 2000.
- Llewellyn Smith, S. G. Scattering of sound by vorticity in the short-wave limit. Wave Phenomena III. Edmonton, June 2001.
- Llewellyn Smith, S. G. Conversion of the barotropic tide. American Physical Society, Division of Fluid Dynamics, San Diego, November 2001.
- Llewellyn Smith, S. G. Shear diffusion in plumes. American Geophysical Union Ocean Sciences Meeting. Honolulu, February 2002.

-
- Llewellyn Smith, S. G. Surface and internal tides from bottom pressures and altimetry. JASON-1 Science Working Team Meeting. Biarritz, June 2002.
 - Llewellyn Smith, S. G. & Tobias, S. M. Vortex dynamos. CMG 24th International Conference on Mathematical Geophysics. Torino, June 2002.
 - Llewellyn Smith, S. G. & Tobias, S. M. Vortex Dynamics. American Physical Society, Division of Fluid Dynamics. Dallas, November 2002.
 - Llewellyn Smith, S. G. & Young, W. R. Mathematical Models of Tidal Conversion. JBK80 Workshop on Applied Mathematics – Future Directions. Stanford, January 2003.
 - Llewellyn Smith, S. G. & Young, W. R. Tidal conversion by a knife-edge. EGS - AGU - EUG Joint Assembly. Nice, France, April 2003.
 - Llewellyn Smith, S. G.. Tidal conversion by a knife-edge. IUGG General Assembly, Sapporo, Japan, July 2003.
 - Llewellyn Smith, S. G.. Stratified rotating edge waves. American Geophysical Union Ocean Sciences Meeting. Portland, February 2004.
 - Llewellyn Smith, S. G. & Tobias, S. M. Vortex dynamos. Euromech 448 “Vortex dynamics and Field interactions”. Paris, September 2004.
 - Llewellyn Smith, S. G., Gille, S. T. & Stom, N. M. Global Observations of the Land Breeze. American Physical Society, Division of Fluid Dynamics. Chicago, November 2005.
 - Llewellyn Smith, S. G & A. Paci. Linear instability of an anticyclonic vortex in a two-layer rotating fluid. American Geophysical Union Ocean Sciences Meeting. Honolulu, February 2006.
 - Llewellyn Smith, S. G., Adamou, A. T. I. & Craster, R. V. Edge waves in a rotating stratified fluid. American Physical Society, Division of Fluid Dynamics. Tampa, November 2006.
 - Llewellyn Smith, S. G., Michelin, S. & Crowdy, D. G. When does the dipole caused by the motion of a two-dimensional body vanish? American Physical Society, Division of Fluid Dynamics. Salt Lake City, November 2007.
 - Llewellyn Smith, S. G.. Michelin, S. & Crowdy D. G. Vortex shedding using the Brown-Michael equation. World University Network Meeting. Southampton, July 2008.
 - Llewellyn Smith, S. G. & Glover, B. J. A resolution to the paradox of pollen shedding? Human Frontier Science Program Annual Awardees Meeting. Berlin, July 2008.
 - Llewellyn Smith, S. G. Reduced models in fluid mechanics: can they help? Leverhulme Trust International Network Meeting: Bridging the gap between fish behaviour and hydraulics. Southampton, September 2008.

-
- Llewellyn Smith, S. G. & Davis, A. M. J. Tangential oscillations of a circular disk in a viscous stratified fluid. American Physical Society, Division of Fluid Dynamics. Minneapolis, November 2009.
 - Llewellyn Smith, S. G. The motion of singularities in potential flow. Fluid Dynamics: From Theory to Experiment. Bozeman, June 2010.
 - Llewellyn Smith, S. G. Axisymmetric steady magnetic vortices with swirl. Seventh International Conference on Flow Dynamics. Sendai, November 2010.
 - Llewellyn Smith, S. G. The motion of singularities in potential flow. American Physical Society, Division of Fluid Dynamics. Long Beach, November 2010.
 - Llewellyn Smith, S. G. & Crowdy, D. G. New results on hollow vortices. ICIAM 2011, Vancouver, July 2011.
 - Llewellyn Smith, S. G. & Crowdy, D. G. New results on hollow vortices. American Physical Society, Division of Fluid Dynamics. Baltimore, November 2011.
 - Llewellyn Smith, S. G., Crowdy, D. G. & Frelich, D. V. Hollow vortices. Journée vortex, École Nationale Supérieure de l'Aéronautique et de l'Espace. Toulouse, June 2012.
 - Llewellyn Smith, S. G., Crowdy, D. G. & Frelich, D. V. Collaborative Research: Beyond point vortices: Moving singularities and wave fields in fluid mechanics. 2012 NSF CMMI Engineering Research and Innovation Conference. Boston, July 2012.
 - Llewellyn Smith, S. G. Calculating viscous internal gravity waves. American Physical Society, Division of Fluid Dynamics. San Diego, November 2012.
 - Llewellyn Smith, S. G. Compressible point vortices. IUTAM Symposium on Vortex Dynamics: Formation, Structure and Function. Fukuoka, March 2013.
 - Llewellyn Smith, S. G. & Keppel, C. Dynamically consistent weakly 3D transport using SQG. 3D+1 MURI Review. Washington DC, May 2013.
 - Llewellyn Smith, S. G. & Nagem, R. Vortex dipoles. SIAM Conference on Applications of Dynamics Systems. Snowbird, May 2013.
 - Llewellyn Smith, S. G. Desingularized propagating vortex equilibria. American Physical Society, Division of Fluid Dynamics. Pittsburgh, November 2013.
 - Llewellyn Smith, S. G. & Keppel, C. 3D dynamics of SQG vortices and passive scalar transport. American Geophysical Union Ocean Sciences Meeting. Honolulu, February 2014.
 - Llewellyn Smith, S. G. & Davis, A. M. J. Tsunami propagation using a consistent acoustic-gravity wave formulation. Japanese Society of Fluid Mechanics Annual Meeting. Sendai, September 2014.
 - Llewellyn Smith, S. G. & Keppel, C. Dynamics of SQG vortices and passive scalar transport. 3D+1 MURI Meeting. Miami, November 2014.

-
- Llewellyn Smith, S. G. & Davis, A. M. J. Tsunami propagation using a consistent acoustic-gravity wave formulation. American Physical Society, Division of Fluid Dynamics. San Francisco. November 2014.
 - Llewellyn Smith, S. G., Crowdy, D. G. & Freilich, D. V. Hollow vortices. *Frontiers in Applied & Computational Mathematics*. Newark, June 2015.
 - Llewellyn Smith, S. G. & Cros, A. Modelling the sky dancer. *Fluids & Elasticity*. Biarritz, June 2015.
 - Llewellyn Smith, S. G. & Gagniere, S. Excess pore water pressure due to ground surface erosion. American Physical Society, Division of Fluid Dynamics. Boston, November 2015.
 - Llewellyn Smith, S. G., Lahaye, N. & Paci, A. The instability of lenticular vortices. American Geophysical Union Ocean Sciences Meeting. New Orleans, February 2016.
 - Llewellyn Smith, S. G. Hollow Vortices. Southern California Applied Mathematics Symposium. Claremont, June 2016.
 - Llewellyn Smith, S. G., Freilich, D. V., Krishnamurthy, V. & Crowdy, D. G. Motion of a compressible vortex pair. International Congress on Theoretical and Applied Mechanics. Montreal, August 2016.
 - Llewellyn Smith, S. G. & Taylor, C. K. Interacting SQG Vortices and Passive Scalar Transport. VIIIth International Symposium on Stratified Flows. San Diego, August 2016.
 - Llewellyn Smith, S. G. & Freilich, D. V. Sadvorskii vortices in strain. International Conference on Fluid Dynamics, Sendai, October 2016.
 - Llewellyn Smith, S. G. & Davis, A. M. J. Instability of a vortex sheet leaving a right-angled wedge. American Physical Society, Division of Fluid Dynamics. Portland, November 2016.
 - Llewellyn Smith, S. G. Solving matrix Wiener–Hopf problems numerically via Riemann–Hilbert problems. Applied and Computational Complex Analysis Workshop, ICMS, Edinburgh, May 2017.
 - Llewellyn Smith, S. G. & Taylor, C. K. Interacting SQG Vortices and Scalar Transport. SIAM Conference on Applications of Dynamics Systems. Snowbird, May 2017.
 - Llewellyn Smith, S. G. Generalizing Point Vortices. Perspectives in Nonlinear Science. Cargèse, March 2018.

Invited talks:

2002: Llewellyn Smith, S. G. & Young, W. R. Tidal conversion. Workshop on Global Bathymetry for Oceanography, Geophysics, and Climatology. Scripps Institution of Oceanography, October 2002.

2006: Llewellyn Smith, S. G. *et al.* Internal-wave interactions with vortices and topography: NIO dispersion and generation of internal tides. CAOS Workshop, Courant Institute, New York University, December 2006.

2009: Llewellyn Smith, S. G. Fluid instability, the continuous spectrum and asymptotic models & Vortex axisymmetrization. Kyushu University Workshop “Math-for-Industry Tutorial: Spectral theories of non-Hermitian operators and their application”, March 2009.

2011: Llewellyn Smith, S. G., Davis, A. M. J. & Martin, P. A. Boundary integral methods for internal waves. Geophysical and Astrophysical Internal Waves Workshop, Les Houches, February 2011.

2012: Llewellyn Smith, S. G. Generalizing point vortices. IUTAM Symposium “From Mechanical to Biological Systems – an Integrated Approach”. Izhevsk, June 2012.

- Llewellyn Smith, S. G. & Lacaze, L. The continuous spectrum in the Moore–Saffman–Tsai–Widnall instability. Workshop on Spectral Analysis, Stability and Bifurcation in Modern Nonlinear Physical Systems. Banff, October 2012.

2014: Llewellyn Smith, S. G., Crowdy, D. G. & Freilich, D. V. Hollow vortices. A Journey through Industrial and Applied Mathematics: Celebrating the 80th Birthday of Ellis Cumberbatch. Claremont Graduate University, May 2014.

2015: Llewellyn Smith, S. G. Solving matrix Wiener–Hopf problems numerically via Riemann–Hilbert problems. 1st International Research Meeting on Applied and Computational Complex Analysis (ACCA-BR), Recife, December 2015.

2017: Llewellyn Smith, S. G. Generalizing point vortices. Hassan Aref Memorial Lecture, Virginia Tech University, September 2017.

2018: Llewellyn Smith, S. G. & Luca, E. Solving matrix Wiener–Hopf problems numerically. David Abrahams 60th birthday meeting. Isaac Newton Institute, University of Cambridge. September 2018.

Seminars:

1995: Department of Applied Mathematics, University of Cambridge. Department of Aerospace Engineering, University of Southern California.

1996: Physical Oceanography Research Division, Scripps Institution of Oceanography. Geophysical Fluid Dynamics Summer School, Woods Hole Oceanographic Institution.

1997: Department of Applied Mathematics, University of Cambridge.

1998: Department of Mathematics, University College London. Department of Mathematics, University of East Anglia. Department of Theoretical Mechanics, University of Nottingham. Department of Mathematics, Imperial College. Physical Oceanography, IFREMER, Brest (3 seminars). AMES, University of California, San Diego.

1999: Department of Applied Mathematics, University of Cambridge. OCIAM, Department of Mathematics, University of Oxford. Department of Physics, University of Tokyo; Fluid Dynamics. University of Electro-communication, Tokyo; Fluid Dynamics.

2000: Department of Mechanical and Aerospace Engineering, University of California, Irvine. Geophysical Fluid Dynamics Summer School, Woods Hole Oceanographic Institution.

2001: Physical Oceanography Research Division, Scripps Institution of Oceanography. Department of Aerospace Engineering and Engineering Mechanics, San Diego State University. Ocean Research Institute, University of Tokyo. Research Institute in Applied Mechanics, Kyushu University. Kyushu Institute of Technology. Department of Mathematics, Kyushu University. Applied mathematics in atmosphere-ocean dynamics, Royal Meteorological Society Dynamical Problems Group, Imperial College. Computational Science Research Center, San Diego State University.

2003: Department of Mechanical and Aerospace Engineering, University of California San Diego. GALCIT, California Institute of Technology.

2004: Department of Physics, University of Toronto. Physical Oceanography Research Division, Scripps Institution of Oceanography. Center for Atmosphere Ocean Science, Courant Institute, New York University. Department of Physics, University of California, San Diego. Geophysical Fluid Dynamics Summer School, Woods Hole Oceanographic Institution. Institute of Theoretical Geophysics, University of Cambridge. Department of Mathematics, Imperial College. Laboratoire d'Écoulements Géophysiques et Industriels, Grenoble. Laboratoire de Modélisation en Mécanique, Université de Paris VI.

2005: Laboratoire de Météorologie Dynamique, Ecole Normale Supérieure, Paris. Laboratoire de Physique Statistique, Ecole Normale Supérieure, Paris. Institut de Recherche sur les Phénomènes Hors Equilibre, Marseille. Geophysical Fluid Dynamics Summer School, Woods Hole Oceanographic Institution.

2006: Department of Aerospace and Mechanical Engineering, University of Southern California.

2008: Department of Aerospace and Mechanical Engineering, University of California, Los Angeles.

2009: Department of Mathematics, Harvey Mudd College. Department of Mathematics, Wichita State University. Department of Aerospace Engineering, San Diego State University. Institute of Applied Mathematics, University of British Columbia.

2010: Department of Mathematics, Massachusetts Institute of Technology. Department of Structural Engineering, University of California, San Diego.

2011: Department of Mathematics, University of New Mexico. Institut de Mécanique des Fluides de Toulouse. E.T.S.I. Aeronáuticos, Polytechnic University of Madrid. Department of Mathematics, University of Bristol. Department of Applied Mathematics and Theoretical Physics, University of Cambridge.

2012: Laboratoire d'Hydrodynamique (LadHyX), Ecole Polytechnique. Institut de Mathématiques, Université de Bordeaux 1. Laboratoire d'Écoulements Géophysiques et Industriels, Grenoble. Ecole Normale Supérieure, Lyon. Institut de Recherche sur les Phénomènes Hors Equilibre, Marseille. Department of Mathematics, University of Manchester. Department of Mathematics, University of Leeds. OCIAM, Department of Mathematics, University of Oxford. Department of Mathematics, Imperial College.

2013: GALCIT, California Institute of Technology Department of Mathematics, Louisiana State University. Department of Mathematical Sciences, New Jersey Institute of Technology. Department of Applied Mathematics, University of Colorado, Boulder.

2014: Department of Mathematics, San Diego State University.

2015: Department of Mechanical Engineering, University of California, Santa Barbara. Department of Mechanical and Aerospace Engineering, University of California, Los Angeles. Department of Applied Mathematics (eTalk), University of Washington.

2016: Department of Aerospace and Mechanical Engineering, University of Southern California. Department of Mathematics, University of Wisconsin. Department of Mathematics, University of California, Davis. Department of Physics, University of Texas. Department of Applied Mathematics, University of California, Santa Cruz. Department of Mathematics, University of Michigan. CICESE (Ensenada).

2017: Department of Oceanography, Naval Postgraduate School. Department of Mathematics, University of California, Irvine.

2018: Fluid Mechanics Seminar, Stanford University.

2019: Integrated Applied Mathematics Seminar, University of New Hampshire.

2021: Institut Jean le Rond d'Alembert, Sorbonne Université.

Grants:

2001: *Conversion of the barotropic tide over two-dimensional topography.* Chancellor's Summer Faculty Fellowship Award, University of California, San Diego. \$4,000.

2001–2002: *Biological and chemical implications of dispersion in plumes.* Hellman Fellowship 2001, University of California, San Diego. \$15,000.

2002–2006: *CAREER: Flutter, tumble and fall: extending Maxwell's problem of the falling plate, and using sports as an educational aid in science and engineering.* NSF. \$375,000.

2002–2006: *Topography, TOPEX, and tides,* joint with W. R. Young. NASA. \$342,292.

2004–2009: *CRC: Gas Hydrates: from fundamental theory to hydrogen transport,* joint with K. C. Janda, V. A. Apkarian, K. D. Jordan and W. S. Reeburgh. NSF. \$2,800,000.

2005–2009: *Physics of adaptation: the evolution of dispersivity,* joint with B. J. Glover. Human Frontier Science Program. \$750,000.

2009–2013: *Horizontal convection: the role of turbulence.* NSF \$519,857.

2010–2013: *New exact solutions for vortex rings with swirl and magnetic field,* joint with Y. Hattori. Collaborative Research Project 2010–2013, Institute of Fluid Science, Tohoku University ¥426,000 + 315,000 + 263,000.

2010–2013: *Dynamical Systems Theory and Lagrangian Data Assimilation in 4D Geophysical Fluid Dynamics,* joint with L. J. Pratt, A. Griffa, H. S. Huntley, A. C. Poje, C. K. R. T. Jones, A. D. Kirwan, B. L. Lipphardt, I. Mezić, T. Özgökmen, I. Rypina, S. Scott and E. Spiller. ONR \$231,916.

2010–2013: *Collaborative Research: Beyond Point Vortices: Moving Singularities and Wave Fields in Fluid Mechanics.* NSF \$244,360.

2012–2015: *Sky dancer: a complex fluid-structure interaction system,* joint with A. Cros. UC Mexus \$9,500.

2012–2016: *Real-Time Assimilation Of Ionospheric Data for Tsunami Prediction,* joint with J.-B. Minster and J. W. Rottman. ONR \$413,998.

2013–2015: *Beyond horizontal convection,* joint with K. B. Winters. NSF \$373,388.

2013–2016: *The continuous spectrum in the Moore–Saffman–Tsai–Widnall instability,* joint with Y. Hattori. Collaborative Research Project 2013–2016, Institute of Fluid Science, Tohoku University ¥256,000 + 230,000 + 208,000.

2014–2015: *Interdisciplinary Collaboratory: physics, mathematics and mechanics of the gravity/fluid correspondence,* joint with B. Grinstein, M. Holst and J. McGreevy. UCSD \$35,000.

2015–2019: *Collaborative Research: Riemann-Hilbert problems, Riemann surfaces: computations and applications,* joint with B. Deconinck. NSF \$274,995.

2016–2019: *Instability and Nonlinear Dynamics of Curved Vortices*, joint with Y. Hattori, S. Le Dizès and Y. Fukumoto. Collaborative Research Project 2016–2019, Institute of Fluid Science, Tohoku University ¥645,000 + 404,000 + 968,000.

2017–2020: *The dynamics of buoyant vortices*. NSF \$315,665.

2018–2021: *Collaborative Research: Radiatively Driven Convection in a deep freshwater lake*, joint with J. Austin and A. Scotti. NSF \$387,754.

2019–2022: *MODULUS: Modeling and experimental investigation of protein crowding on lipid bilayers*, joint with P. Rangamani, M. Holst and S. Stachowiak. NSF \$1,010,688.

Postdoctoral scholars advised:

François Pétrélis, 2003 (joint with Bill Young). Now Chargé de Recherche CNRS, Ecole Normale Supérieure, Paris.

Emanuele di Lorenzo, 2003 (SIO, joint with Bill Young). Now Professor, Georgia Institute of Technology.

Wenbo Tang, 2005–2006. Now Associate Professor, ASU.

Vincent Morin, 2006–2007. Now Chercheur, ENS Lyon.

Marcel Ilie, 2008–2009.

Rodolphe Chabreyrie, 2011–2012. Now at Oblon.

Christopher Green, 2014–2015. Now at Macquarie University.

Noé Lahaye, 2014–2016. Now at UBO.

Elena Luca, 2017–2019. Now at UCL.

Graduate students advised:

Erik C. Hurlen *The Motions and Wave Fields Produced by an Ellipse Moving Through a Stratified Fluid*. Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2006.

Devin T. Conroy, *Chemically reacting plumes, gas hydrate dissociation and dendrite solidification*. Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2008.

Sébastien Michelin, *Falling, flapping, flying, swimming, . . . : high-Re fluid-solid interactions with vortex shedding*. Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2009.

Javier Urzay, *Theoretical studies in spiral edge-flame propagation and particle hydrodynamics*. Ph.D. (joint with Forman Williams) Department of Mechanical and Aerospace Engineering, UCSD, 2010.

Roy Barkan, *From Forcing to Dissipation: Kinetic and Available Potential Energy Pathways in Idealized Models of Ocean Circulation* Ph.D. (joint with Kraig Winters), Scripps Institution of Oceanography, UCSD. 2015.

Katarzyna Matusik, *The response of convection driven by surface buoyancy fluxes to surface mechanical forcing* Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2015.

Cecily Keppel Taylor, *Surface quasigeostrophic vortex dynamics and resulting transport with weak vertical motion*, Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2016.

Daniel Freilich, *The Sadovskii vortex*, Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2016.

Yue (Cynthia) Wu, *The Propagation of Tsunami-Generated Internal Waves in the Atmosphere*, Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2018.

Ching Chang, *Vortex Motion and Stability with Density Variation, Buoyancy and Surface Tension*, Department of Mechanical and Aerospace Engineering, UCSD. 2020.

Todd Christopher, Department of Mechanical and Aerospace Engineering, UCSD. 2016–.

Jennifer Fromm (joint with Padmini Rangamani), Department of Mechanical and Aerospace Engineering, UCSD. 2018–2021.

Tianyi Chu (joint with Oliver Schmidt), Department of Mechanical and Aerospace Engineering, UCSD. 2019–.

Graduate research projects advised:

Océane Arboune, Ecole Normale Supérieure de Lyon. 2002.
Alexandre Paci, Météo France. 2003.
Pierre Augier, Ecole Normale Supérieure de Lyon. 2005.
Pierre Boivin, Ecole Polytechnique. 2006.
Thomas-Jérémie Sablong, Institut Français de Mécanique Avancée. 2007.
Alexis Cuquel, ENSTA, 2009.
Benjamin Bécler, Ecole Normale Supérieure de Lyon. 2011.
Anne-Laure Henri, Institut des Sciences de l'Ingénieur de Toulon et du Var. 2011.
Hugo Dubos, Institut des Sciences de l'Ingénieur de Toulon et du Var. 2011.
Raoul Dekou (joint with Laurent Lacaze), Université Paul Sabatier (at IMFT). 2012.
YongOu Zhang, Huazhong University of Science and Technology, 2014–2015.
Lison Balsalobre, Ecole Centrale de Paris. 2016.
Yu Chen, Fudan University, 2016.
Qian Shi, Fudan University, 2016.
Jiahao Gong, UCSD. 2018.
Antoine Pallois (joint with James Friend), Ecole Polytechnique. 2018.

Undergraduate research projects advised:

Norma Sagrero, UCSD. 2000.
Ridder Manzanet, UCSD. 2001.
Denise Bogard, UCSD. 2003–2004.
Jeremy Beer, UCSD. 2003–2004.
Jason Korniski, UCSD. 2004.
Patrick Sanan, UCSD. 2005.
Andrew Ulvestad, UCSD, 2008.
Tien-Hao (Tim) Lai, UCSD, 2008.
Gary Ka-Hay Ng, UCSD, 2011.
Stefanie Perez, UCSD, 2013–2014.
Joseph Adachi, UCSD, 2013–2015.
Steven Gagniere, UCSD, 2013–2015.
Emma Schoenthal, UCSD, 2017.
Zinan Hu, UCSD, 2019–2020.
Brandon Li, UCSD, 2019–2020.
Katie Freitag, UCSD, 2020.

Student committees:

Daniel Mahoney *A Numerical Study of the Effects of Stratification on the Short-Wave Instability in a Vortex Pair*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2002.

Hideaki Tsutsui *Evolution of a Counter-Rotating Vortex Pair in a Stably Stratified Fluid*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2003.

PierVicenzo Rizzo *Health monitoring of tendons and stay cables for civil structures*. Ph.D., Department of Structural Engineering, UCSD. 2004.

Brian Chinn *Estimating Eddy Heat Flux from Float Data in the North Atlantic: The Impact of Temporal Sampling Interval*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2005.

Jill Weinberger *Investigations of the structural and hydrologic context of gas hydrate deposits on Hydrate Ridge, Oregon*. Ph.D., Scripps Institution of Oceanography. 2005.

Wenbo Tang *What can variational calculus tell us about ocean turbulence – Rigorous bounds on mixing and dissipation in geophysical flows*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2005 (chair).

Edward Reed *A Small Low-Cost Blended Wing Unmanned Aerial Vehicle (UAV) for Long Range Atmospheric Monitoring*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2005.

Morris Flynn, *Buoyancy and Stratification in Boussinesq Flow with Applications to Natural Ventilation and Intrusive Gravity Currents*. Ph.D. Department of Mechanical and Aerospace Engineering, UCSD. 2006.

Zuhair Ibrahim, *An Acoustic Energy Framework for Predicting Combustion-Driven Acoustic Instabilities in Premixed Gas-Turbines*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2007.

Julie Vanderhoff, *A numerical, observational investigation of internal wave propagation in stably stratified shear flows*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2007.

Michele Barbato, *Finite element response sensitivity, probabilistic response and reliability analyses of structural systems with applications to earthquake engineering*. Ph.D., Department of Structural Engineering, UCSD. 2007.

J. J. Becker, *Improved bathymetry, global sea floor roughness, and deep ocean mixing*. Ph.D., Scripps Institution of Oceanography, UCSD. 2008.

Shane Keating, *Wavy magnetohydrodynamic turbulence*. Ph.D., Department of Physics, UCSD. 2008.

Ethan Roth, *Arctic Ocean long-term acoustic monitoring: ambient noise, environmental correlates, and transient signals North of Barrow, Alaska*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2008.

Karen Weitemeyer, *Marine electromagnetic methods for gas hydrate characterization*. Ph.D., Scripps Institution of Oceanography, UCSD. 2008.

Aurélien Ponte, *Wind and tidal response of a semi-enclosed bay, Bahía Concepción, Baja California*. Ph.D., Scripps Institution of Oceanography, UCSD. 2009.

Robin Matoza, *Seismic and infrasonic source processes in volcanic fluid systems*. Ph.D., Scripps Institution of Oceanography, UCSD. 2009.

Michael Gollner, *A Fundamental Approach for Storage Commodity Classification*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2010.

Jong Keun Yu, *A study of time dependant responses of a mechanical Displacement Ventilation (DV) system and an Underfloor Air Distribution (UFAD) system; Building energy performance of the UFAD system*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2010.

Sylvia Cole, *Spatial and temporal modulation of internal waves and thermohaline structure*. Ph.D., Scripps Institution of Oceanography, UCSD. 2010.

Melissa Omand, *Physical controls on episodic nearshore phytoplankton blooms in Southern California*. Ph.D., Scripps Institution of Oceanography, UCSD. 2011.

Robert Todd, *Upper ocean processes observed by underwater gliders in the California Current System*. Ph.D., Scripps Institution of Oceanography, UCSD. 2011.

Alex James, *Investigations of runaway electron generation, transport, and stability in the DIII-D tokamak*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2011.

Kourosh Shoele, *Flow Interactions with Highly Flexible Structures*. Ph.D., Department of Structural Engineering, UCSD. 2011.

Gwynn Elfring, *Symmetry Breaking and Synchronization at Small Scales*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2012.

Elizabeth Rivers, *Exploring the Geometry of Circumnuclear Material in Active Galactic Nuclei through X-ray Spectroscopy*. Ph.D., Department of Physics, UCSD. 2012.

Kaushik Srinivasan, *Stochastically forced zonal flows*. Ph.D., Scripps Institution of Oceanography, UCSD. 2013.

Andrew Ulvestad, *Structure-function Investigation of Operando Nanostructured Materials Using Coherent X-ray Diffractive Imaging*. Ph.D., Department of Physics, UCSD. 2015.

Harishankar Manikantan, *Bending, Buckling, Tumbling, Trapping: Viscous Dynamics of Elastic Filament*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2015.

Gregory Wagner, *On the coupled evolution of oceanic internal waves and quasi-geostrophic flow*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2016.

Emmanuel Garcia, *Marine Gravity Variations and the Strength of the Oceanic Lithosphere with Bending*. Ph.D., Scripps Institution of Oceanography, UCSD. 2016.

Kathleen Galloway, *Natural Treatment Systems for Stormwater Cleanup in Southern California: A biofilter coastal case study*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2016.

Anikesh Pal, *Dynamics of stratified flow past a sphere: simulations using temporal, spatial and body inclusive numerical models*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2016.

Ricardo Felez, *Residual streaming flows in buoyancy driven cross-shore*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2017.

Rongjie Hong, *Investigation of Turbulence-Driven Shear Flows in Toroidal and Cylindrical Plasmas*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2017.

Noah Hurst, *Electron Vortices Subject To Imposed Strain Flows*. Ph.D., Department of Physics, UCSD. 2018.

John Holloway, *Prescribed-Time Stabilization and Estimation for Linear Systems with Applications in Tactical Missile Guidance*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2018.

Cesar Rocha, *The turbulent and wavy upper ocean: transition from geostrophic flows to internal waves and stimulated generation of near-inertial waves*. Ph.D., Scripps Institution of Oceanography, UCSD. 2018.

Erik Kolb, *An Experimental Approach to the Blue Whirl*. M. S., Department of Mechanical and Aerospace Engineering, UCSD. 2018.

Haotian Sun, *Non-Boussinesq stability analysis of natural-convection flow over a horizontal hot plate*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2018.

Xiang Fan, *Cascades, Spectra, Real Space Structure, Inhomogeneous Mixing and Transport in Active Scalar Turbulence*. Ph.D., Department of Physics, UCSD. 2019.

Prabakaran Rajamanickam, *Computational Modeling of Cell Membrane Mechanics from Sub-Cellular to Tissue Length Scales*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2019.

Brato Chakrabarti, *Problems on viscous dynamics of passive and active microfilaments*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2019.

Ritvik Vasan, *Numerical and analytical investigations of non-isothermal*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2020.

Can Yang, *Diffusion of Run-and-Tumble Microswimmers in Porous Media*. M.S., Department of Mechanical and Aerospace Engineering, UCSD. 2020.

Yue Zheng, *Probing the Local Mechanical Properties of Pre-deformed Soft Materials*. Ph.D., Department of Mechanical and Aerospace Engineering, UCSD. 2020.

Robin Heinonen, *Topics in Mesoscopic Turbulent Transport*. Ph.D., Department of Physics, UCSD. 2021.

Vicky Verma, Department of Mechanical and Aerospace Engineering, UCSD. 2018–.

Arijit Mahapatra, Department of Mechanical and Aerospace Engineering, UCSD. 2021–.

S. G. Llewellyn Smith - CV

Outreach:

2005: Mysteries of Water Institute, University of California, Irvine (aimed at high school chemistry teachers).

2010: Scripps Institution of Oceanography GK12 program (Earth sciences workshop for SDUSD high school teachers).

2017: San Diego State University REU Program (aimed at math undergraduates).

2018–2020: Outreach to High School math teachers with UCSD CREATE.