

Usama Kadri

Publication List - August 2022

PUBLISHED INTERVIEWS & NEWS

My research efforts have been highlighted by University news (Cardiff and MIT) and worldwide press releases with over 150 national and international interviews and news items, among which are BBC, Discovery Channel, & Icon Films and Discovery Communications. My work has also been mentioned recently in children's science book on innovating ideas, in a novel, and in the series Scorpion, season 4, episode 15 'Wave Goodbye'; a video made by 'Now This' on my 2017 tsunami mitigation publication attracted more than 1 million views within less than 24 hrs.

JOURNAL PAPERS

- 1 R. Omira, R. Ramalho , J. Kim , P. González , U. Kadri , M. Miranda , F. Carrilho , M.A. Baptista, 2022. Global Tonga tsunami explained by a fast-moving atmospheric source, *Nature* (2022). <https://doi.org/10.1038/s41586-022-04926-4>.
- 2 C. Meza-Valle, U. Kadri & J. Ortega, 2022. Acoustic-gravity waves generated by extreme ocean waves. *Eur. J. Mech B/Fluids*. (accepted with minor revisions).
- 3 B. Gomez & U. Kadri, 2021. Earthquake source characterization by machine learning algorithms applied to acoustic signals. *Scientific Reports*, **11** 23062, <https://doi.org/10.1038/s41598-021-02483-w>.
- 4 B. Gomez & U. Kadri, 2021. Near real-time calculation of submarine fault properties using an inverse model of acoustic signals. *Applied Ocean. Research*, **109** 102557, <https://doi.org/10.1016/j.apor.2021.102557>.
- 5 U. Kadri, Z. Wang, 2021. Approximate solution of nonlinear triad interactions of acoustic-gravity waves in cylindrical coordinates. *Commun in Nonlinear Sci Numer Simulat*, **93** 105514.
- 6 Williams, U. Kadri, & A. Abdolali, 2021. Acoustic–gravity waves from multi-fault rupture. *J. Fluid Mech.*, vol. 915, A108, doi:10.1017/jfm.2021.101
- 7 U. Kadri, 2020. Variation of quantified infection rates of mixed samples to enhance rapid testing during an epidemic. *Health Systems*, 10.1080/20476965.2020.1817801.
- 8 U. Kadri, 2020. Time-Reversal Analogy by Nonlinear Acoustic-Gravity Wave Triad Resonance. *Fluids* **4** (2), 91.
- 9 U. Kadri, 2020. Multiple-location matched approximation for Bessel function J_0 and its derivatives. *Communications in Nonlinear Science and Numerical Simulation* **72**, 59-63.
- 10 U. Kadri, 2020. Variation of positiveness to enhance testing of specimens during an epidemic. *arXiv preprint arXiv:2004.11753*
- 11 A. Abdolali, U. Kadri, & J. Kirby, 2019. Effect of Water Compressibility, Sea-floor Elasticity, and Field Gravitational Potential on Tsunami Phase Speed. *Scientific Reports*, **9** (1), 1-8.
- 12 U. Kadri, 2019. Effect of sea-bottom elasticity on the propagation of acoustic-gravity waves from impacting objects. *Scientific Reports*, 10.1038/s41598-018-37626-z.
- 13 C.C. Mei & U. Kadri, 2018. Sound signals of tsunami from slender faults. *J. Fluid Mech.*, **836**, pp. 352–373, doi:10.1017/jfm.2017.811. (**Altmetric 693, #1 of 1,325**)
- 14 A. Abdolali, U. Kadri, W. Parsons, & J. Kirby, 2018. On the propagation of acoustic-gravity waves under elastic ice-sheets *J. Fluid Mech.*, **837**, pp. 640–656, doi:10.1017/jfm.2017.808. (**Altmetric 641, #3 of 1,325**)

- 15 U. Kadri, 2018. Approximation of Bessel functions for nonlinear interaction of acoustic-gravity waves. *arXiv preprint arXiv:1806.03697*
- 16 U. Kadri, D. Crivelli, W. Parsons, B. Colbourne, & A. Ryan, 2017. Rewinding the waves: tracking underwater signals to their source. *Scientific Reports*, **7**:13949, doi:10.1038/s41598-017-14177-3
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- 17 U. Kadri, 2017. Tsunami mitigation by resonant triad interaction with acoustic-gravity waves. *Heliyon*, doi: 10.1016/j.heliyon.2017.e00234 (**Altmetric 488, #1 of 265**)
- 18 M. Tian, U. Kadri, 2017. Wavemaker theories for acoustic-gravity waves over a finite depth. *J Eng Math*, doi:10.1007/s10665-017-9902-1
- 19 U. Kadri, 2017. Faraday waves by resonant triad interaction of surface-compression waves. *arXiv preprint arXiv:1701.00667*
- 20 U. Kadri, F. Brümmer and A. Kadri, 2016. Random pattern in fish schooling enhance manoeuvrability. *EPL*, **116** 34002, doi: 10.1209/0295-5075/116/34002.
- 21 T.C.A. Oliveira, U. Kadri, 2016. Pressure field induced by acoustic-gravity waves from the 2004 Indian Ocean Earthquake. *Journal of Geophysical Research: Oceans*. doi: 10.1002/2016JC011742.
- 22 U. Kadri, 2016. Acoustic-gravity waves from an oscillating ice-block in arctic zones. *Advances in Acoustics and Vibration*, **8076108**, <http://dx.doi.org/10.1155/2016/8076108>
- 23 U. Kadri, T.R. Akylas, 2016. On resonant triad interactions of acoustic gravity waves. *J. Fluid Mech.*, **788**, R1(12 pages), doi:10.1017/jfm.2015.721 (**Altmetric 145, #2 of 633**)
- 24 U. Kadri, 2016. Triad resonance between a surface gravity wave and two high frequency hydro-acoustic waves. *European Journal of Mechanics - B/Fluids*, **55**(1), 157-161, doi:10.1016/j.euromechflu.2015.09.008.
- 25 M. Stiassnie, U. Kadri, R. Stuhlmeier, 2015. Harvesting wave-power in open seas. *J. Ocean Eng. and Marine Energy*, doi:10.1007/s40722-015-0038-y.
- 26 U. Kadri, 2015. Wave motion in a heavy compressible fluid: revisited. *European Journal of Mechanics - B/Fluids*, **49**(A), 50-57, doi:10.1016/j.euromechflu.2014.07.008
- 27 U. Kadri, 2015. Acoustic-gravity waves interacting with a trapezoidal trench *Int. J. Geophys.* Volume 2015, Article ID 806834, doi:10.1155/2015/806834
- 28 L. Badarnah and U. Kadri, 2015. A methodology for the generation of biomimetic design concepts. *Architectural Science Review*, **58**(2), 120-133, doi:10.1080/00038628.2014.922458.
- 29 U. Kadri, 2014. Deep ocean water transportation by acoustic-gravity waves. *J. Geophys. Res.* **119**(11), 7925-7930 doi: 10.1002/2014JC010234.
- 30 U. Kadri, 2014. Prediction of the gas pulsation frequency in gas/liquid horizontal pipe flow. *SPE J*, doi: 10.2118/172996-PA
- 31 U. Kadri and D. Weihs, 2014. Higher order effects on the hydrodynamic interaction between two slender bodies. *J Mar Sci Technol*, doi: 10.1007/s00773-014-0275-0.
- 32 U. Kadri, 2014. A probabilistic approach model for predicting average slug frequency in horizontal gas/liquid pipe flow. *Oil Gas Sci. Technol. - Rev. IFP Energies nouvelles*, doi:<http://dx.doi.org/10.2516/ogst/ 2012070>.

- 33 U. Kadri, 2014. Space periodic Jacobi elliptic solution for triad modified schrödinger equations. *arXiv*: 1410.5025 [math-ph].
- 34 U. Kadri and M. Staissnie, 2013. Generation of an acoustic-gravity wave by two gravity waves, and their mutual interaction. *J. Fluid Mech.* **735**, R6, doi:10.1017/jfm.2013.539.
- 35 U. Kadri and M. Staissnie, 2013. A note on the shoaling of Acoustic-Gravity waves. *WSEAS Transactions on Fluid Mechanics* **8**(2), 43-49.
- 36 E. Eyov, A. Klar, U. Kadri, and M. Staissnie, 2013. Progressive waves in a compressible ocean with elastic bottom. *Wave Motion* **50**, 929-939. doi: 10.1016/j.wavemoti.2013.03.003
- 37 U. Kadri and M. Staissnie, 2012. Acoustic-Gravity waves interacting with the shelf break. *J. Geophys. Res.*, **117**, C03035, doi: 10.1029/2011JC007674.
- 38 U. Kadri, R.A.W.M. Henkes, R.F. Mudde, and R.V.A. Oliemans, 2011. Effect of gas pulsation on long slugs in horizontal gas-liquid pipe flow. *Int. J. Multiphase Flow* **27**, 1120-1128.
- 39 U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2010. Influence of the operation pressure on slug length in near horizontal gas-liquid pipe flow. *Int. J. Multiphase Flow* **36**, 423-431.
- 40 U. Kadri, R.F. Mudde, and R.V.A. Oliemans, M. Bonizzi, P. Andreussi, 2009. Prediction of the transition from stratified to slug flow or roll-waves in gas-liquid horizontal pipe flow. *Int. J. Multiphase Flow* **35**, 1001-1010.
- 41 U. Kadri, M.L. Zoeteweij, R.F. Mudde, and R.V.A. Oliemans, 2009. A growth model for dynamic slugs in gas-liquid horizontal pipes. *Int. J. Multiphase Flow* **35**, 439-449.

THESES

- 42 **Long liquid slugs in stratified gas/liquid flow in horizontal and slightly inclined pipes.**
U. Kadri, 2009. Ph.D. thesis, Delft University of Technology, Delft, The Netherlands. ISBN 978-90-9024536-2.
- 43 **The flow field and forces on two slender bodies moving in close proximity.**
U. Kadri, 2005. M.Sc. Thesis, Technion Libraries, Israel Institute of Technology, Haifa.
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CONFERENCES & PROFESSIONAL MEETINGS

- 44 B. Williams, U. Kadri, 2021. The Effect of Elasticity on Acousticgravity Waves From Multifault Rupture. AGU Fall Meeting Abstracts 2021, OS45A-09
- 45 A. Abdolali, U. Kadri, B Williams, J Kirby, 2021. An Efficient Tsunami Arrival Time Estimator Coupled to Acoustic Gravity Wave Multi-Fault Rupture solution. AGU Fall Meeting Abstracts 2021, NH25B-0558
- 46 **Tsunami mitigation via nonlinear triad resonance with acoustic?gravity waves II: 3D theory and laboratory experiments.**
U. Kadri, Z. Wang & A. Chabchoub, Conference Paper. October 2018.
- 47 **Acoustic-gravity wave propagation from a slender fault.**
B. Williams & U. Kadri, 2018, *UK US Underwater Acoustics*, abstract + poster

48 Inverse theory for Tsunami acoustic waves.

B. Gomez & U. Kadri, 2018. Poster, SIAM UKIE Annual Meeting, Southampton, 11th Jan.

49 Tsunami early detection through acoustic waves.

B. Gomez & U. Kadri, 2018. Poster, EGU General Assembly 2018, Vienna, Austria, 8-13 April.

50 Tsunami early detection through acoustic waves.

B. Gomez & U. Kadri, 2018. Poster 1st price in poster session, 10th SIAM-IMA Oxford Student Chapter Conference, Oxford UK, 2nd May.

51 Towards an early tsunami warning system: Inverse solution of acoustic radiation from slender fault

B. Gomez & U. Kadri, 2018. The 10th South China Sea Tsunami Workshop (SCSTW-10), Singapore, 10-11, Oct.

52 Acoustic-gravity wave propagation from a slender fault.

B. Williams & U. Kadri, 2018. The 10th South China Sea Tsunami Workshop (SCSTW-10), Singapore, 10-11, Oct.

53 Towards an early tsunami warning system: Inverse solution of acoustic radiation from slender fault

B. Gomez & U. Kadri, 2018. UKUS Underwater Acoustics Conference, Oxford, Uk, 3-4th December.

54 Tsunami mitigation via nonlinear triad resonance with acoustic-gravity waves.

U. Kadri, 2017. The 9th South China Sea Tsunami Workshop (SCSTW-9), Qingdao, China, 23-24, Oct.

55 Sound signals of tsunami from a slender fault.

C.C. Mei., U. Kadri, 2017. The 9th South China Sea Tsunami Workshop (SCSTW-9), Qingdao, China, 23-24, Oct.

56 Impact location of objects hitting the water surface.

U. Kadri, 2017. EGU General Assembly Conference Abstracts 19, 10307.

57 Propagation of acoustic-gravity waves in arctic zones with elastic ice-sheets.

U. Kadri, A. Abdolali, J.T. Kirby, 2017. EGU General Assembly Conference Abstracts 19, 15629.

58 Tsunami mitigation-redistribution of energy.

U. Kadri, 2017. EGU General Assembly Conference Abstracts 19, 10542.

59 Towards field and laboratory experiments with ocean acoustic-gravity waves.

T.C.A. Oliveira, Y. T. Lin, A. Morozov, U. Kadri, 2016. EGU General Assembly, Vienna, Austria.

60 The role of gravity in ocean acoustics propagation and its implication to early tsunami detection. T.C.A. Oliveira, Y. T. Lin, U. Kadri, 2016. EGU General Assembly, Vienna, Austria.

61 Acoustic Remote Sensing of Extreme Sea States.

W. Parsons, U. Kadri, 2016. EGU General Assembly, Vienna, Austria.

62 Mild-Slope Equation for acoustic-gravity waves over an elastic bottom.

M. Tian, U. Kadri, 2016. EGU General Assembly, Vienna, Austria.

- 63 **Wavemaker theories for acoustic-gravity waves over a finite depth.**
M. Tian, U. Kadri, 2016. EGU General Assembly, Vienna, Austria.
- 64 **Deep water velocities and particle displacements induced by acoustic-gravity waves from submarine earthquakes.** T.C.A. Oliveira, U. Kadri, 2016. Ocean Sciences Meeting, New Orleans, Louisiana.
- 65 **Nonlinear interaction of internal and acoustic-gravity waves in continuously-stratified ocean.**
M. Tian, U. Kadri, K. Helfrich, 2016. Ocean Sciences Meeting, New Orleans, Louisiana.
- 66 **Acoustic-gravity waves from submarine earthquakes - towards an early tsunami detection system.** T.C.A. Oliveira, U. Kadri, 2015. AGU Fall Meeting, San Francisco, LA.
- 67 **Triad resonance in the gravity-acoustic family.**
U. Kadri, 2015. AGU Fall Meeting, San Francisco, LA.
- 68 **Resonant triad interactions of acoustic-gravity waves.**
U. Kadri, T.R. Akylas, 2015. 68th Annual Meeting of the APS Division of Fluid Dynamics, Boston, MA.
- 69 **Acoustic-gravity waves, theory and applications.**
U. Kadri, W. Munk, W. Farrell, 2015. EGU General Assembly 2015, EGU2015-1337, Vienna, Austria.
- 70 **Deep ocean circulation by acoustic-gravity waves: from snowball to greenhouse earth.**
U. Kadri, 2015. EGU General Assembly 2015, EGU2015-2559, Vienna, Austria.
- 71 **Acoustic-gravity waves, theory and applications.**
U. Kadri, 2014. 61st New England Workshop on Complex Fluids, Harvard University, Cambridge MA, USA.
- 72 **Acoustic-gravity waves**
M. Stiassnie, U. Kadri, G. Hendin, E. Eyov, 2014. Workshop on Advances in Applied Nonlinear Mathematics, September 18-19th, Bristol, United Kingdom.
- 73 **A note on the shoaling of Acoustic-Gravity waves.**
U. Kadri and M. Stiassnie, 2013. Proceedings of the 10th WSEAS International Conference on Fluid Mechanics (Fluids '13), Milan, Italy, pp. 29-45.
- 74 **A method for reducing the negative effects of long slugs.**
U. Kadri, R.A.W.M. Henkes, R.F. Mudde, and R.V.A. Oliemans, 2010. Proceedings 7th North American Conference on Multiphase Technology, Banff, Canada, 7, pp. 53-67.
- 75 **Long liquid slugs in pipelines.**
U. Kadri, 2010. Burgersdag 2010, University of Twente, Enschede, The Netherlands.
- 76 **Slugs, turbulence and the butterfly effect.**
U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2009. Proceedings 14th International Conference on Multiphase Production Technology, Cannes, France, 14, pp. 319-330.
- 77 **A bio-inspired ventilating envelope optimized by air-flow simulations.**
L. Badarnah, U. Kadri, and U. Knaack, 2008. The World Sustainable Building (SB) Conference series, Melbourne, Australia, pp. 29.
- 78 **A growth model for dynamic slugs in gas/liquid horizontal pipes.**

U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2008. Proceedings 6th North American Conference on Multiphase Technology, Banff, Canada, 6, pp. 241-254.

79 The effect of the liquid level on the characteristics of forming slugs.

U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2008. Proceedings 7th International ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements, Limassol, Cyprus 7.

80 A theoretical growth model for hydrodynamic slugs in gas/liquid horizontal pipes.

U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2008. Proceedings 22nd International Congress of Theoretical and Applied Mechanics (ICTAM2008), Adelaide, Australia 22, pp. 113.

81 On the prediction of the transition from stratified flow to roll waves and slug flow in horizontal pipes.

U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2007. Proceedings 13th International Conference on Multiphase Production Technology, Edinburgh, Scotland 13, pp. 65-78.

82 On the development of waves into roll waves and slugs in gas-liquid horizontal pipe flow.

U. Kadri, R.F. Mudde, and R.V.A. Oliemans, 2007. Proceedings 6th International Conference on Multiphase Flow, Leipzig, Germany 6, 332.

83 Long liquid slugs in horizontal pipelines.

U. Kadri, R.V.A. Oliemans and, R.F. Mudde, 2007. Netherlands Process Technology Symposium 2007 (NPS7), Veldhoven, The Netherlands.

84 Long liquid slugs in horizontal pipelines.

U. Kadri, R.V.A. Oliemans and, R.F. Mudde, 2007. Annual Scientific FOM-meeting on Condensed Matter Physics, Veldhoven, The Netherlands.

85 Long liquid slugs in horizontal pipelines.

U. Kadri, R.V.A. Oliemans and, R.F. Mudde, 2006. Netherlands Process Technology Symposium 2006 (NPS6), Veldhoven, The Netherlands.

86 Hydrodynamic forces and moments on two slender bodies moving in close proximity.

U. Kadri and D. Weihs, 2005. The 30th Israeli Conference on Mechanical Engineering, Tel-Aviv, Israel.

TECHNICAL REPORTS

87 Analysis of data signal revisited: inverse problem approach.

U. Kadri, D. Crivelli, W. Parsons, 2017. Prepared for the Australian Transportation Safety Bureau, 2017/2/8.

88 MH370 – Definition of Impact Location by Acoustic-Gravity Waves

U. Kadri, W. Parsons, 2016. Prepared for the Australian Transportation Safety Bureau, 2016/9/15.

89 MH370 – Definition of Impact Location by Acoustic-Gravity Waves.

U. Kadri, 2016. Prepared for the Australian Transportation Safety Bureau, 2016/3/28.
