

## Dr Eldad Avital

PhD, SMAIAA, SFHEA, FRAeS, CEng

School of Engineering and Materials Science  
Queen Mary University of London  
Mile End Road  
London E1 4NS

tel: +44 (0)20 7882 3616

email: e.avital@qmul.ac.uk web: www.sems.qmul.ac.uk/e.avital

---

### 2025

**Travelling-wave gel dipolophoresis of hydrophobic conducting colloids.**

. *The European Physical Journal E* vol. 48, (4-5).Springer Science and Business Media Llc.

### 2024

**Development of a novel multi-component coupled numerical model for aquaculture systems in OpenFOAM.**

. *Applied Ocean Research* vol. 151, 104146-104146.Elsevier Bv.

**Design Considerations and Flow Characteristics for Couette-Type Blood-Shear Devices.**

. *Fluids* vol. 9, (7) 157-157.Mdpi Ag.

**A Numerical Study on the Influence of Riparian Vegetation Patch on the Transportation of Suspended Sediment in a U-Bend Channel Flow.**

. *Fluids* vol. 9, (5) 109-109.Mdpi Ag.

**Effects of Leading-Edge Blowing Control and Reduced Frequency on Airfoil Aerodynamic Performances.**

. *Journal of Fluids Engineering* vol. 146, (10).Asme International.

**Airborne Transmission of SARS-CoV-2: The Contrast between Indoors and Outdoors.**

. *Fluids* vol. 9, (3) 1-28.Mdpi.

### 2023

**Self-Diffusiophoresis and Symmetry-Breaking of a Janus Dimer: Analytic Solution.**

. *Symmetry* vol. 15, 2019-2019.

**Investigation of the formation and evolution of over-tip shock waves in the pressure-driven tip leakage flow by time-resolved schlieren visualization.**

. *Physics of Fluids* vol. 35, (5) 056101-056101.

**Conceptual Design of a UVC-LED Air Purifier to Reduce Airborne Pathogen TransmissionA Feasibility Study.**

. *Fluids* vol. 8, (4) 111-111.Mdpi Ag.

**A Study on the Influence of Submergence Ratio on the Transport of Suspended Sediment in a Partially Vegetated Channel Flow.**

. *Water Resources Research* vol. 59, (3).American Geophysical Union (Agu).

**Influence of curvature distribution smoothing on the reduction of aerofoil self-noise.**

. *International Journal of Numerical Methods For Heat & Fluid Flow* vol. 33, (4) 1379-1393.Emerald.

### 2022

**An implicit EulerianLagrangian model for flow-net interaction using immersed boundary method in OpenFOAM.**

. *Ocean Engineering* vol. 264, 112843-112843.Elsevier Bv.

---

**An improved Eulerian method in three-dimensional direct numerical simulation on the local scour around a cylinder.**

. *Applied Mathematical Modelling* vol. 110, 320-337.Elsevier Bv.

**Variation of dominant discharge along the riverbed based on numerical and deep-learning models: A case study in the Middle Huaihe River, China.**

. *Journal of Hydrology* vol. 612, 128285-128285.Elsevier Bv.

**Travelling-Wave Electrophoresis, Electro-Hydrodynamics, Electro-Rotation, and Symmetry-Breaking of a Polarizable Dimer in Non-Uniform Fields.**

. *Micromachines* vol. 13, (8) 1173-1173.Mdpi Ag.

**Magnetohydrodynamics Solver for a Two-Phase Free Surface Flow Developed in OpenFOAM.**

. *Fluids* vol. 7, (7) 210-210.Mdpi Ag.

**Source terms for benchmarking models of SARS-CoV-2 transmission via aerosols and droplets.**

. *Royal Society Open Science* vol. 9, (5).The Royal Society.

**Direct numerical simulation on local scour around the cylinder induced by internal solitary waves propagating over a slope.**

. *Ocean Engineering* vol. 247, 110525-110525.Elsevier Bv.

## 2021

**Self-thermophoresis of laser-heated spherical Janus particles.**

. *The European Physical Journal E* vol. 44, (11).Springer Science and Business Media Llc.

**A resolved CFD-DEM-IBM algorithm for water entry problems.**

. *Ocean Engineering* vol. 240, 110014-110014.Elsevier Bv.

**A numerical study on suspended sediment transport in a partially vegetated channel flow.**

. *Journal of Hydrology* vol. 599, 126335-126335.Elsevier Bv.

**Turbulent flow simulation of a single-blade Magnus rotor.**

. *Advances in Aerodynamics* vol. 3, (1).Springer Science and Business Media Llc.

**Numerical Study of A Generic Tidal Turbine Using BEM Optimization Methods.**

. *China Ocean Engineering* vol. 35, (3) 344-351.Springer Science and Business Media Llc.

**Effect of in-service burnout effect on the transonic leakage flows over cavity tip model.**

. *Proceedings of The Institution of Mechanical Engineers, Part a: Journal of Power and Energy* vol. 235, (8) 1847-1863.Sage Publications.

**Aerodynamic performance improvements of a vertical axis wind turbine by leading-edge protuberance.**

. *Journal of Wind Engineering and Industrial Aerodynamics* vol. 211, 104535-104535.Elsevier Bv.

**A psychrometric model to assess the biological decay of the SARS-CoV-2 virus in aerosols.**

. *Peerj* vol. 9, e11024-e11024.Peerj.

**Large Eddy Simulation of Microvortex Generators in a Turbulent Boundary Layer.**

. *Journal of Fluids Engineering* vol. 143, (5).Asme International.

**A numerical study on the influence of curvature ratio and vegetation density on a partially vegetated U-bend channel flow.**

. *Advances in Water Resources* vol. 148, 103843-103843.Elsevier Bv.

## 2020

**A Review on the Energy prospects of Indian Remote Islands and Preliminary assessment of Marine Current Energy Potential.**

. *Journal of Physics: Conference Series* vol. 1716, (1) 012007-012007.IOP Publishing.

**Tidal Current Energy for Indian Coastal Lines A State Art of Review.**  
. *Journal of Physics: Conference Series* vol. 1716, (1) 012008-012008.IOP Publishing.

**A psychrometric model to predict the biological decay of the SARS-CoV-2 virus in aerosols.**

**Upper-room ultraviolet air disinfection might help to reduce COVID-19 transmission in buildings: a feasibility study.**  
. *Peerj* vol. 8, e10196-e10196.Peerj.

**On the hydrodynamic stability of an imploding rotating circular cylindrical liquid liner.**  
. *Fluid Dynamics Research* vol. 52, (5) 055505-055505.IOP Publishing.

**Upper-room ultraviolet air disinfection might help to reduce COVID-19 transmission in buildings.**

**Numerical modelling of a dual-rotor marine current turbine in a rectilinear tidal flow.**  
. *Ocean Engineering* vol. 200, 107026-107026.Elsevier Bv.

**Direct Numerical Simulations on Jets during the Propagation and Break down of Internal Solitary Waves on a Slope.**  
. *Water* vol. 12, (3) 671-671.Mdpi Ag.

**Aspects of the hybrid finite discrete element simulation technology in science and engineering.**  
. *International Journal For Engineering Modelling* vol. 32, (2-4).Faculty of Civil Engineering, Architecture and Geodesy, University of Split.

**Dynamic large deformation analysis of a cantilever beam.**  
. *Math. Comput. Simul.* vol. 174, 183-204.

## 2019

**A resolved CFDEM method for the interaction between the fluid and the discontinuous solids with large movement.**  
. *International Journal For Numerical Methods in Engineering* vol. 121, (8) 1738-1761.Wiley.

**Fluidstructure interaction of flexible submerged vegetation stems and kinetic turbine blades.**  
. *Computational Particle Mechanics* vol. 7, (5) 839-848.Springer Science and Business Media Llc.

**Light-induced heat-conducting micro/nano spheroidal particles and their thermoosmotic velocity fields.**  
. *International Journal of Heat and Mass Transfer* vol. 143, 118541-118541.Elsevier Bv.

**Performance Improvements for a Vertical Axis Wind Turbine by Means of Gurney Flap.**  
. *Journal of Fluids Engineering* vol. 142, (2).Asme International.

**Large deformations of tapered beam with finite integration method.**  
. *Engineering Analysis With Boundary Elements* vol. 107, 115-123.Elsevier Bv.

**Effect of in-service burnout on the transonic tip leakage flows over flat tip model.**  
. *Proceedings of The Institution of Mechanical Engineers, Part a: Journal of Power and Energy* vol. 234, (5) 655-669. Sage Publications.

**CFD analysis for the performance of micro-vortex generator on aerofoil and vertical axis turbine.**  
. *Journal of Renewable and Sustainable Energy* vol. 11, (4).Aip Publishing.

**Study on the packed volume-to-void ratio of idealized human red blood cells using a finite-discrete element method.**  
. *Applied Mathematics and Mechanics* vol. 40, (5) 737-750.Springer Science and Business Media Llc.

**A performance analysis of tidal turbine conversion system based on control strategies.**  
. *Energy Procedia* vol. 160, 526-533.Elsevier Bv.

**CFD Analysis for the Performance of Gurney Flap on Aerofoil and Vertical Axis Turbine.**

. *International Journal of Mechanical Engineering and Robotics Research* 385-392. Ejournal Publishing.

**Optimization of a horizontal axis marine current turbine via surrogate models.**

. *Ocean Systems Engineering-An International Journal* vol. 9, (2) 111-133.

**The Surface Curvature Effect on Performance of a Laboratory Scale Tidal Turbine.**

. *Transactions On Engineering Technologies* 101-113. Springer Singapore.

**Numerical Modelling of the Effects of Surface Roughness on Blunt Body Heat Transfer.**

. *31st International Symposium On Shock Waves* 2 571-582. Springer International Publishing.

## 2018

**Low Reynolds number proprotor aerodynamic performance improvement using the continuous surface curvature design approach.**

. *Aeronautical Journal* vol. 123, (1259) 20-38. Cambridge University Press (Cup).

**Optimization of Axial Pump Characteristic Dimensions and Induced Hemolysis for Mechanical Circulatory Support Devices.**

. *Asaio Journal* vol. 64, (6) 727-734. Ovid Technologies (Wolters Kluwer Health).

**Numerical and Experimental Study of Microvortex Generators.**

. *Journal of Aircraft* vol. 55, (6) 2256-2266. American Institute of Aeronautics and Astronautics (Aiaa).

**Hydrodynamic Assessment of a Dual-Rotor Horizontal Axis Marine Current Turbine.**

. *International Journal of Engineering & Technology* vol. 7, (4.10) 455-459. Science Publishing Corporation.

**Computational Parametric Study of the Axial and Radial Clearances in a Centrifugal Rotary Blood Pump.**

. *Asaio Journal* vol. 64, (5) 643-650. Ovid Technologies (Wolters Kluwer Health).

**Creating Real-Time Aeroacoustic Sound Effects Using Physically Informed Models.**

. *Journal of The Audio Engineering Society* vol. 66, (7/8) 594-607. Audio Engineering Society.

**A Novel Contact Algorithm Based on a Distance Potential Function for the 3D Discrete-Element Method.**

. *Rock Mechanics and Rock Engineering* vol. 51, (12) 3737-3769. Springer Science and Business Media Llc.

**NASAL INTERNAL AND EXTERNAL AERODYNAMICS FOR HEALTHY AND BLOCKED CAVITIES.**

. *Journal of Mechanics in Medicine and Biology* vol. 18, (5) 1850050-1850050. World Scientific Publishing.

**One-layer particle level set method.**

. *Computers & Fluids* vol. 170, 141-156. Elsevier Bv.

**A novel discrete element method based on the distance potential for arbitrary 2D convex elements.**

. *International Journal For Numerical Methods in Engineering* vol. 115, (2) 238-267. Wiley.

## 2017

**Sound Scattering by an Elastic Spherical Shell and its Cancellation using a Multi-pole Approach.**

. *Archives of Acoustics* vol. 42, (4) 697-705. Walter De Gruyter Gmbh.

**A three-phases model for the simulation of landslide-generated waves using the improved conservative level set method.**

. *Computers & Fluids* vol. 159, 243-253. Elsevier Bv.

**A computational model of ureteral peristalsis and an investigation into ureteral reflux.**

. *Biomedical Engineering Letters* vol. 8, (1) 117-125. Springer Science and Business Media Llc.

**Surface curvature effects on the tonal noise performance of a low Reynolds number aerofoil.**

. *Applied Acoustics* vol. 125, 34-40. Elsevier Bv.

**Flow design and simulation of a gas compression system for hydrogen fusion energy production.**

. *Fluid Dynamics Research* vol. 49, (4) 045504-045504.IOP Publishing.

**Numerical Simulation of Shoaling Broad-Crested Internal Solitary Waves.**

. *Journal of Hydraulic Engineering* vol. 143, (6).American Society of Civil Engineers (Asce).

**Experimental investigation of nonlinear properties of crackle and screech in supersonic jets.**

. *The Journal of The Acoustical Society of America* vol. 141, (6) EL567-EL573.Acoustical Society of America (Asa).

**Machinability and Optimization of Shrouded Centrifugal Impellers for Implantable Blood Pumps.**

. *Journal of Medical Devices* vol. 11, (2).Asme International.

**Pressure Wave in Liquid Generated by Pneumatic Pistons and Its Interaction with a Free Surface.**

. *International Journal of Applied Mechanics* vol. 09, (03) 1750037-1750037.World Scientific Pub Co Pte Lt.

**In-vitro investigation of the hemodynamic responses of the cerebral, coronary and renal circulations with a rotary blood pump installed in the descending aorta.**

. *Medical Engineering & Physics* vol. 40, 2-10.Elsevier Bv.

**An Investigation on the Aggregation and Rheodynamics of Human Red Blood Cells Using High Performance Computations.**

. *Scientifica* vol. 2017, 1-10.Wiley.

**Propagation of Pressure Waves in Compression System Prototype for Magnetized Target Fusion Reactor in General Fusion Inc.**

. *30th International Symposium On Shock Waves* 2 955-960. Springer International Publishing.

## 2016

**Slip and turbulence phenomena in journal bearings with application to implantable rotary blood pumps.**

. *Tribology International* vol. 104, 157-165.Elsevier Bv.

**Computational methods for investigation of surface curvature effects on airfoil boundary layer behavior.**

. *Journal of Algorithms & Computational Technology* vol. 11, (1) 68-82.Sage Publications.

**Experimental study of surface curvature effects on aerodynamic performance of a low Reynolds number airfoil for use in small wind turbines.**

. *Journal of Renewable and Sustainable Energy* vol. 8, (5).Aip Publishing.

**On parallel preconditioners for pressure Poisson equation in LES of complex geometry flows.**

. *International Journal For Numerical Methods in Fluids* vol. 83, (5) 446-464.Wiley.

**Numerical simulation of interaction between internal solitary waves and submerged ridges.**

. *Applied Ocean Research* vol. 58, 118-134.Elsevier Bv.

**In-vitro investigation of cerebral-perfusion effects of a rotary blood pump installed in the descending aorta.**

. *Journal of Biomechanics* vol. 49, (9) 1865-1872.Elsevier Bv.

**Effects of Submergence on Low and Moderate Reynolds Number Free-Surface Flow Around a Matrix of Cubes.**

. *Journal of Fluids Engineering* vol. 138, (5).Asme International.

## 2015

**Large Eddy Simulation of Flows Around a Kite Used as an Auxiliary Propulsion System.**

. *Journal of Fluids Engineering* vol. 137, (10).Asme International.

**Numerical Investigation of Surface Curvature Effects on Aerofoil Aerodynamic Performance.**

. *Applied Mechanics and Materials* vol. 798, 589-595.Trans Tech Publications, Ltd.

**Aerodynamics of Wind Turbine Technology.**

. Wiley.

**Sound scattering and its cancellation by an elastic spherical shell in free space and near a free surface.**  
. *Wave Motion* vol. 55, 35-47.Elsevier Bv.

## 2014

**Sound Scattering and Its Reduction by a Janus Sphere Type.**  
. *Advances in Acoustics and Vibration* vol. 2014, 1-11.Wiley.

**Numerical investigation of particle saltation in the bed-load regime.**  
. *Science China Technological Sciences* vol. 57, (8) 1500-1511.Springer Science and Business Media Llc.

**A wellbalanced explicit/semiimplicit finite element scheme for shallow water equations in dryingwetting areas.**  
. *International Journal For Numerical Methods in Fluids* vol. 75, (12) 815-834.Wiley.

**Saltation of particles in turbulent channel flow.**  
. *Physical Review E* vol. 89, (5).American Physical Society (Aps).

**Computations of Nonlinear Propagation of Sound Emitted from High Speed Mixing Layers.**  
. *Open Acoustics J.* 3, 11-20.

**Numerical Simulation of a marine current turbine in free surface flow.**  
. *Renewable Energy* vol. 63, 715-723.Elsevier/Science Direct.

**Thin film flow of magnetohydrodynamic (MHD) pseudo-plastic fluid on vertical wall.**  
. *Appl. Math. Comput.* vol. 245, 544-556.

## 2013

**Simulation of the upper urinary system.**  
. *Critical Reviews in Biomedical Engineering* vol. 41, (3) 259-268.

**Large scale simulation of red blood cell aggregation in shear flows.**  
. *Journal of Biomechanics* vol. 46, (11) 1810-1817.Elsevier Bv.

**Direct numerical simulation of sediment entrainment in turbulent channel flow.**  
. *Physics of Fluids* vol. 25, (5).Aip Publishing.

**NONLINEAR PROPAGATION OF SOUND EMITTED BY HIGH SPEED WAVE PACKETS.**  
. *Journal of Computational Acoustics* vol. 21, (02) 1250027-1250027.World Scientific Pub Co Pte Lt.

**Solution of the steady thin film flow of non-Newtonian fluid on vertical cylinder using Adomian Decomposition Method.**  
. *J. Frankl. Inst.* vol. 350, 818-839.

**Solution of the steady thin film flow of non-Newtonian fluid on vertical cylinder using Adomian Decomposition Method.**  
. *Journal of The Franklin Institute* vol. 350, (4) 818-839.Elsevier/Science Direct.

**Investigation of Improved Aerodynamic Performance of Isolated Airfoils Using CIRCLE Method.**  
. *Procedia Engineering* vol. 56, 560-567.Elsevier Bv.

**Simulation of the Upper Urinary System.**  
. *Critical Reviews in Biomedical Engineering* vol. 41, (3) 259-268.Begell House.

## 2012

**Sound Scattering by a Flexible Plate Embedded on Free Surface.**  
. *Advances in Acoustics and Vibration* vol. 2012, 1-13.Wiley.

**Effect of jet noise reduction on gas turbine engine efficiency.**  
. *Proceedings of The Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* vol. 227, (9) 1441-1455.Sage Publications.

**Aerodynamic Improvements of Wind-Turbine Airfoil Geometries With the Prescribed Surface Curvature Distribution Blade Design (CIRCLE) Method.**

. *Journal of Engineering For Gas Turbines and Power* vol. 134, (8).Asme International.

**Detached Eddy Simulation of Free-Surface Flow Around a Submerged Submarine Fairwater.**

. *Journal of Fluids Engineering* vol. 134, (6).Asme International.

**Design of high-efficiency turbomachinery blades for energy conversion devices with the three-dimensional prescribed surface curvature distribution blade design (CIRCLE) method.**

. *Appl Energ* vol. 89, (1) 215-227.

**Immersed boundary based fluid coupling in mechanics of discontinua.**

. *Advances in Discontinuous Numerical Methods and Applications in Geomechanics and Geoengineering* 67-72.

## 2011

**Sound scattering by free surface piercing and fluid-loaded cylindrical shells.**

. *Philos T R Soc A* vol. 369, (1947) 2852-2863.

## 2009

**COMPUTATION OF THE FLOW AND NEAR SOUND FIELDS OF A FREE SURFACE PIERCING CYLINDER.**

. *J Comput Acoust* vol. 17, (4) 365-382.

**Study of sound generated by large-scale structures in low speed coaxial jets.**

. *Int J Aeroacoust* vol. 8, (3) 261-281.

## 2008

**Large eddy simulation of flow past free surface piercing circular cylinders.**

. *J Fluid Eng-T Asme* vol. 130, (10).

**Computational aeroacoustics: The low speed jet.**

. *Aeronaut J* vol. 112, (1133) 405-414.

**Nonlinear Propagation of Screech Noise.**

. *The Journal of The Acoustical Society of America* vol. 123, (5\_Supplement) 3249-3249.Acoustical Society of America (Asa).

**Hydrodynamics and sound generation of low speed planar jet.**

. *J Fluid Eng-T Asme* vol. 130, (3).

## 2006

**Influence of the position of crew members on aerodynamics performance of two-man bobsleigh.**

. *J Biomech* vol. 39, (15) 2733-2742.

## 2005

**On three-dimensionality and control of incompressible cavity flow.**

. *Phys Fluids* vol. 17, (10).

**A second look at the role of the fast Fourier transform as an elliptic solver.**

. *Int J Numer Meth Fl* vol. 48, (9) 909-927.

## 2004

**Advanced bobsleigh design. Part 1: Body protection, injury prevention and performance improvement.**

. *Proceedings of The Institution of Mechanical Engineers Part L Journal of Materials Design and Applications* vol. 218, (2) 129-137.



**Advanced bobsleigh design. Part 1: body protection, injury prevention and performance improvement.**  
. *P I Mech Eng L-J Mat* vol. 218, (L2) 129-137.

**Sound Generation by Vortex Pairing in Subsonic Axisymmetric Jets.**  
. *Aiaa Journal* vol. 42, (2).

**Direct computation and aeroacoustic modelling of a subsonic axisymmetric jet.**  
. *Journal of Sound and Vibration* vol. 270, (3) 525-538.

## 2002

**Assessment of adequacy of ray acoustics approach for prediction of barrier insertion loss in the presence of a reflecting ground.**  
. *The Journal of The Acoustical Society of America* vol. 112, (5\_Supplement) 2213-2213. Acoustical Society of America (Asa).

**Optimized differentiation schemes on non-uniform grids for computational aeroacoustics.**  
. *J Comput Acoust* vol. 10, (2) 195-209.

## 2000

**Stretched Cartesian grids for solution of the incompressible Navier-Stokes equations.**  
. *Int J Numer Meth Fl* vol. 33, (6) 897-918.

## 1999

**Calculation of basic sound radiation of axisymmetric jets by direct numerical simulations.**  
. *Aiaa Journal* vol. 37, (2) 161-168.

**On an inverse problem of ship-induced internal waves.**  
. *Ocean Eng* vol. 26, (2) 99-110.

**Analysis of sound generated by free shear flows using direct numerical simulations.**  
. *The Journal of The Acoustical Society of America* vol. 105, (2\_Supplement) 1008-1008. Acoustical Society of America (Asa).

**Understanding Turbulence in Fluids using Direct Simulation Data.**  
. *High-Performance Computing* 407-416. Springer Us.

**Calculation of basic sound radiation of axisymmetric jets by direct numerical simulations.**  
. *Aiaa Journal* vol. 37, 161-168. American Institute of Aeronautics and Astronautics (Aiaa).

## 1998

**Mach wave radiation by mixing layers. Part I: Analysis of the sound field.**  
. *Theor Comp Fluid Dyn* vol. 12, (2) 73-90.

**Mach wave radiation by mixing layers. Part II: Analysis of the source field.**  
. *Theor Comp Fluid Dyn* vol. 12, (2) 91-108.

## 1997

**A note on the structure of the acoustic field emitted by a wave packet.**  
. *J Sound Vib* vol. 204, (3) 533-539.

**Box-length requirements for simulation of sound from large structures in jets.**  
. *Aiaa J* vol. 35, (5) 912-915.

**Box-length requirements for simulation of sound from large structures in jets.**  
. *Aiaa Journal* vol. 35, 912-915. American Institute of Aeronautics and Astronautics (Aiaa).



1995

**Asymmetric instability of a viscid capillary jet in an inviscid media.**

. *Physics of Fluids* vol. 7, (5) 1162-1164. Aip Publishing.

1994

**On the Determination of Density Profiles in Stratified Seas from Kinematical Patterns of Ship-Induced Internal Waves.**

. *Journal of Ship Research* vol. 38, (04) 308-318. The Society of Naval Architects and Marine Engineers.