

Keyword index to volume 28

- $k-\omega-\bar{\epsilon}^2-\epsilon_t$, 1112
 Acoustic dipole, 575
 Adverse pressure gradient, 145, 418
 Aero engine applications, 512
 Aerodynamic losses, 341
 Aerodynamics, 616
 Air pocket shape, 673
 Air–water interface, 673
 Aircraft aerodynamics, 602
 Airflow pattern, 963
 Alumina–water nanofluid, 1492
 Aspect ratio, 1013
 Axial flow compressors, 587
 Axial throughflow, 1391, 1405
 Axis ratio, 1178
 Bénard problem, 496
 Backward-facing step, 665
 Blade, 922
 Blowing, 665
 Boiling, 54
 Boiling regimes, 735
 Boundary layer, 932, 1472
 Boundary layer flow, 262
 Boundary layer instability, 1272
 Bubble, 72
 Bubble-train flow, 83
 Bubbling, 127
 Bubbly flow, 542, 1034
 Buoyancy, 496
 Buoyant effect, 1262
 Buoyant turbulence, 454
 Bypass transition, 161
 Car, 616
 Car packaging, 374
 Ceiling jet, 963
 Centrifugal compressor, 374
 CFD, 575, 587, 616, 653
 Channel flow, 665, 1244
 Channel flow with vortex generator, 299
 Characteristics of the turbulent boundary layer, 1302
 Coherent fine scale eddy, 1280
 Composite material, 1484
 Compressible flow, 1484
 Compressor surge, 374
 Computational fluid dynamics, 963
 Confined impinging jet reactor, 1429
 Confined space, 54
 Confluence point, 1178
 Conical container, 1418
 Conjugate heat transfer, 469, 720
 Consistency condition, 1092
 Convection, 1227
 Convection heat transfer, 178, 988, 1167
 Convective heat transfer, 329, 777
 Convective thermal resistance and conductive resistance, 1013
 Copper oxide–water nanofluid, 1492
 Coriolis force, 357
 Cross-flow, 441, 454, 1178
 Cyclone, 249
 Cylinder, 454, 938
 3D results, 289
 Dean vortex, 357
 Decomposition of motion, 638
 Density ratio, 1312
 Developing flows, 44
 Direct numerical simulation, 83, 542, 847, 1262, 1280, 1291, 1429
 Disintegration mechanisms, 735
 Dissipation, 1340
 Distributed roughness, 1098
 DNS, 306, 630, 1204
 Double-population, 862
 Drag, 821
 Drift-flux model, 1034
 Drop impact, 735
 Drop morphology, 735
 Drop number size moments, 388
 Dust explosions, 1136
 Dynamic excitation, 1302
 Dynamic viscosity, 1492
 Eddy-viscosity models, 602
 Edge tone, 575
 Electrochemical reactor, 542
 Electromagnetic stirring, 768
 Electronic air-cooling, 469
 Electronic cooling, 753, 1360
 Electronics cooling, 787, 806
 Elliptic tube heat exchanger, 1531
 Elliptical cylinder, 1178
 Embedded refinement, 561
 Enclosure, 963
 Engine flow, 113
 Entrance region, 44
 Eulerian–Lagrangian model, 542
 Experiment, 1167
 Experimental, 28
 Experimental data, 1492
 Explicit algebraic Reynolds stress models, 1092
 Far wake, 948
 Favorable pressure gradient, 683
 Field synergy principle, 1531
 Film breakdown, 103
 Film cooling, 922, 1312
 Film-cooling, 341

- Fin and tube heat exchanger, 988
- Finite cylinder, 561
- Finite-volume method, 329
- Finned cavities, 289
- Flow angle, 512
- Flow boiling, 95
- Flow control, 1472
- Flow cytometry, 44
- Flow kinematics, 638
- Flow over cylinder, 1073
- Flow pattern, 220
- Flow pattern maps, 1049, 1060
- Flow patterns, 63
- Flow regimes, 1049, 1060
- Flow simulation, 653
- Flow visualization, 552
- Flow-induced oscillation, 552
- Flow-topology, 616
- Fluctuating flow, 882
- Forced convection, 203, 1027
- Free convection, 1405
- Free end effect, 561
- Free stream, 882
- Friction factor, 28
- Fully developed pipe flow, 847
- Fused silica pipe, 28
- Gas flow, 28
- Gas microsystems, 37
- Gas turbine internal air system, 1391, 1405
- Gas-liquid flow, 72
- Gas-solid flow, 1507
- Gasifier, 1518
- Giesekus model, 838
- Heat, 938
- Heat and fluid transport, 1518
- Heat and mass transfer, 388, 407
- Heat exchanger, 512
- Heat exchanger tube, 318
- Heat exchangers, 516
- Heat losses, 483
- Heat source, 469
- Heat transfer, 72, 95, 299, 753, 932, 1144, 1227, 1262, 1484
- Heat transfer augmentation, 306, 318
- Heat transfer enhancement, 203, 229, 289, 516, 806, 1003, 1472
- Heat/mass transfer, 357
- Heated obstacle, 1003
- Hemodynamics, 653
- High Schmidt number, 1204
- High-lift aerodynamics, 145, 418
- Highly loaded, 932
- Holes, 922
- Horizontal cylinder, 483
- Hot-wire, 882
- Hybrid, 1443
- Hybrid LES-RANS, 275
- Hydrodynamic focusing, 44
- Impinging jet, 708, 1340, 1360
- Infrared study, 103
- Infrared thermography, 988, 1327
- Initial condition, 948
- Instabilities, 54
- Interface, 1192
- Interface wrinkling, 127
- Interfacial area concentration, 1034
- Intermittency, 161
- Internal secondary flow, 673
- Intracranial aneurysm, 653
- Isothermal sphere, 821
- Jet impingement, 178, 720
- Jet in a cross-flow, 1360
- $k-\omega$ model, 1098
- $k-\epsilon$ model, 418
- Knudsen layer, 37
- Knudsen number, 777
- Lagrangian and Eulerian statistics, 871
- Laminar, 787, 821
- Laminar and transitional flows, 862
- Laminar flow, 203, 229, 299
- Laminar forced convection, 15
- Laminar-turbulent transition, 1280
- Large aspect ratio, 978
- Large eddy simulation, 268, 561, 1215, 1443
- Large-eddy simulation, 127, 909, 1227
- Lattice Boltzmann method, 862
- LDA measurements, 1391
- LES, 113, 275, 306, 894, 1360, 1443
- LES/RANS, 1443
- Lift force, 542
- Liquid encapsulated Czochralski method, 768
- Liquid film evaporation, 407
- Local heating, 103
- Low-noise fans, 806
- Low-Reynolds number turbulent open channel flow, 1157
- Magnetic fields, 768
- Mass flux ratio, 1312
- Mass transfer, 1192
- Mass transfer coefficient, 1204
- Maximum mass flow rate, 526
- Micro tube, 72
- Micro-channel, 1034
- Micro/mini channels, 103
- Microchannel, 777, 1027, 1484
- Microchannel heat sink (MCHS), 1013
- Microchannels, 63, 95
- Microfluidics, 37, 44
- Microtube, 28
- Microtube flow, 220
- Mini channel, 1034
- Mini-channel, 1167
- Mini-fin, 1167
- Miniature fans, 806
- Mixed convection, 454
- Mixture model, 211
- Modeling gasifier, 1518
- Moving surface, 708
- Multiphase flow, 1034
- Multiple heat sources, 787
- Nanofluid, 203, 229, 1013, 1492
- Nanofluids, 211
- Nanoparticle, 229
- Nanoparticles, 1492
- Nanostructure, 203
- Naphthalene sublimation technique, 357
- Natural convection, 469, 483, 496, 821, 862, 978, 1472
- Nature of the surface, 735
- Near-wall modelling, 894
- Near-wall treatment, 602
- Non-conforming mesh, 909
- Non-Newtonian, 1027
- Non-uniform mesh, 862
- Numerical modeling, 496
- Numerical modelling, 768

- Numerical simulation, 72, 1027, 1136, 1531
- Numerical solutions, 821
- Numerical study, 469
- Nusselt number, 777, 978
- Open channel, 683
- Opposing jets, 1429
- Optimal design, 526
- Oscillating flow, 575
- Oscillatory flow, 1003
- Particle collision, 1507
- Particle image velocimetry, 683, 1429, 1472
- Particle tracking velocimetry, 249
- Particle transport, 1136
- Particle-image velocimetry (PIV), 1312
- Particle/fluid flows, 1136
- Particles, 1144
- Passive scalar, 1204
- Periodic boundary condition, 329, 978
- Phase separation, 630
- Phase-Doppler anemometer, 191
- Piezoelectric fans, 806
- PIV, 441, 708, 1327
- Poiseuille number, 28
- Porosity, 1013
- Porous bed, 1518
- Porous media, 1144
- Porous medium, 407, 483, 512, 1157
- Port-fuel injection, 191
- Power law, 1027
- Prandtl number effect, 847
- Pre-transitional flow, 1272
- Pressure drop, 72, 220, 512
- Producer gas, 1518
- Pyrolysis, 1484
- Radial jet reattachment, 178
- RANS, 275, 602, 1073
- RANS equations, 161, 1098, 1112
- RANS modeling, 1157
- RANS/LES hybrid methods, 1379
- Rapid distortion, 1073
- Rarefied gas dynamics, 37
- Reattachment control, 665
- Rectangular prism, 1291
- Regular perturbation method, 220
- Renormalization, 249
- Residence time distribution, 83
- Reynolds-stress models, 602
- Reynolds-stress transport model, 418
- Rib, 1112
- Rib turbulator, 357
- Ripples, 673
- Room ventilation, 275
- Rossby number, 262
- Rotating cavity flow, 1391, 1405
- Rotating disk, 720
- Rotating disk flow, 262
- Rotating duct, 357
- Rotating endwall, 1418
- Rotation, 909
- Roughness function, 1098
- Scalar PDF, 1215
- Scalar turbulence, 268
- Schmidt number, 1192
- Second moment closures, 587
- Secondary droplet characteristics, 735
- Semiconductor crystal growth, 768
- Shear-driven liquid film, 103
- Shock, 932
- Shock waves, 1136
- Shroud heat transfer, 1405
- Similarity law, 1098, 1112
- Simultaneously developing flows, 15
- Single crystal growth, 768
- Single phase model, 211
- Sinusoidal disk, 262
- Slip velocity, 1027
- Slip-flow, 777
- Slot jet, 787
- Slotted obstacles, 963
- Slug/plug flow, 673
- Small channel, 54
- Spectral element model, 938
- Spray cooling, 753
- Spray impingement, 191
- Spray modelling, 388
- Square cavity, 862
- Square cylinder, 1327
- Stages, 575
- Stagnation, 1073
- Stereo PIV, 1340
- Straight ducts, 15
- Stratified flow, 1244
- Streaky structures, 1272
- Streamwise oscillation, 552
- Strong curvature, 909
- Subgrid eddy diffusivity model, 268
- Subgrid scale, 1215
- Subgrid-scale model, 1227
- Suction, 665
- Sudden contraction, 429
- Supply and mechanically pulsed, 178
- Surface heat flux, 191
- Suspension, 203
- Swirling flow, 249
- Swirling jet, 1340
- Tandem arrangement, 552
- Tangential flow, 838
- Taylor flow, 83
- Temperature dependent viscosity, 15
- Temporal large-eddy simulation, 1244
- Thermal boundary characteristics, 1144
- Thermal contact resistance, 1144
- Thermal performance parameter, 306
- Thermal response, 882
- Thermal stratification, 1262
- Thermally developing flows, 15
- Three-dimensional effects, 44
- Three-dimensional obstacle, 1291
- Three-dimensional wall roughness, 220
- Tip clearance analysis, 587
- Torque coefficient, 262
- Transition, 1272, 1460
- Transitional channel flow, 1291
- Transonic flow configurations, 602
- Transverse ribs, 683
- Tube bundle, 441
- Tumble, 113
- Turbine, 922
- Turbine blade, 932
- Turbine cooling, 341
- Turbocharger, 374
- Turbocharging, 374
- Turbulence, 249, 630, 708, 932, 1125, 1192, 1227
- Turbulence model, 1460
- Turbulence modeling, 429
- Turbulence modulation, 1507

- Turbulence promoters, 516
Turbulent boundary layer, 683
Turbulent channel flow, 871, 1204
Turbulent diffusion, 871
Turbulent flow, 318, 441, 542, 1244, 1472
Turbulent forced convection, 211
Turbulent heat transfer, 429, 847, 1112, 1291
Turbulent impinging jet, 1327
Turbulent kinetic energy balance, 1340
Turbulent mixing, 1429
Turbulent mixing layer, 1280
Turbulent structure, 948
Turbulent thermal boundary layer, 1262
Turbulent wake, 145, 418
Two circular cylinders, 552
Two phase flow, 211
Two-phase flow, 54, 63, 72, 542, 1049, 1060
Two-phase pressure drops, 1049, 1060
Two-way coupling, 1507
U-duct, 909
Unsteady time-averaging, 1125
Unstructured finite volumes, 561
Unstructured grid, 329
Unstructured mesh, 113
Vane endwall, 341
Vapour recoil, 54
Velocity ratio, 1312
Velocity slip, 37
Vertical channel, 1507
Viscoelastic fluid, 838
Viscous heating, 15
Viscous pump, 526
Visualization, 1327
VOF, 127
Vortex, 821
Vortex breakdown, 1418
Vortex generator, 306, 318
Vortex generator jet, 1302
Vortex identification, 638
Vortex shedding, 561
Vortex-identification criteria, 638
Vortex-shedding, 938
Vortical structures, 638
Vorticity decomposition, 638
Wake flows, 1073
Wake length, 1178
Wall-function, 37
Wall-mounted heated cubes, 1360
Wavelet multi-resolution analysis, 948
Waves, 103
Wavy disk, 262
Wavy fin, 1531
Weak-equilibrium condition, 1092
Weakly nonlinear $k-\omega$ model, 1379
Wheel, 616
Wheelhouse, 616
Wing-body junction, 1379
Winglet pair, 299
Wire coil inserts, 516
Zonal two-layer modelling, 894