

Index to Volume 17, 1996

Author/Title Index

- Abe, K., Kondoh, T. and Nagano, Y.: A two-equation heat transfer model reflecting second-moment closures for wall and free turbulent flows, 228
- Abe, N. *See* Okamoto, S., 211
- Aldoss, T. K. *See* Jarrah, M. A., 397
- Al-Fahed, S. and Chakroun, W.: Effect of tube-tape clearance on heat transfer for fully developed turbulent flow in a horizontal isothermal tube, 173
- Al-Salaymeh, A. S. *See* Jubran, B. A., 148
- Al-Sarkhi, A. M. *See* Jarrah, M. A., 397
- Amano, R. S., Rieger, N. F and Hesler, S.: An aerodynamic analysis of turbine cascade by using a second-order closure of turbulence, 276
- Antohe, B. V., Lage, J. L., Price, D. C. and Weber, R. M.: Numerical characterization of micro heat exchangers using experimentally tested porous aluminum layers, 594
- Armfield, S. and Janssen, R.: A direct boundary-layer stability analysis of steady-state cavity convection flow, 539
- Armfield, S. *See* Janssen, R., 547
- Ashgriz, N., Washburn, R. and Barbat, T.: Segregation of drop size and velocity in jet impinging splash-plate atomizers, 509
- Barbat, T. *See* Ashgriz, N., 509
- Baukal, C. E. and Gebhart, B.: A review of empirical flame impingement heat transfer correlations, 386
- Behnia, M. *See* Dehghan, A. A., 474
- Bejan, A. *See* Homentcovschi, D., 78
- Bergeles, G. *See* Gavaises, M., 130
- Bian, W., Vasseur, P., Bilgen, E. and Meng, F.: Effect of an electromagnetic field on natural convection in an inclined porous layer, 36
- Bilgen, E. *See* Bian, W., 36
- Bosch, G. and Rodi, W.: Simulation of vortex shedding past a square cylinder near a wall, 267
- Bosman, C. and Jadayel, O. C.: A quantified study of rothalpy conservation in turbomachines, 410
- Chakroun, W. *See* Al-Fahed, S., 173
- Chen, C.-K., Yang, Y.-T. and Lin, M.-T.: Transient free convection of non-Newtonian fluids along a wavy vertical plate including the magnetic field effect, 604
- Chen, X. J. *See* Wang, Q., 418
- Cheng, P. *See* Zhao, T. S., 167, 356
- Chiou, C. B. *See* Wang, C. C., 500
- Coleman, G. N., Kim, J., Le, A.-T.: A numerical study of three-dimensional wall-bounded flows, 333
- Craft, T. J. and Launder, B. E.: A Reynolds stress closure designed for complex geometries, 245
- Craft, T. J., Launder, B. E. and Suga K.: Development and application of a cubic eddy-viscosity model of turbulence, 108
- Danilova, G. N. and Tikhonov, A. V.: R113 Boiling heat transfer modeling on porous metallic matrix surfaces, 45
- Dehghan, A. A. and Behnia, M.: Numerical investigation of natural convection in a vertical slot with two heat source elements, 474
- Dehmani, L., Kim-Son, D. and Ghahoué, L.: Turbulent structure of an axisymmetric plume penetrating a strong density stratification, 452
- Devarakonda, R. and Humphrey, J. A. C.: Experimental study of turbulent flow in the near wakes of single and tandem prisms, 219
- Dianat, M., Fairweather, M. and Jones, W. P.: Predictions of axisymmetric and two-dimensional impinging turbulent jets, 530
- Ding, Y. *See* Wang, Q., 418
- Durbin, P. A.: On the k - 3 stagnation point anomaly, 89
- Eggels, J. G. M.: Direct and large-eddy simulation of turbulent fluid flow using the lattice-Boltzmann scheme, 307
- Elena, L. and Schiestel, R.: Turbulence modeling of rotating confined flows, 283
- Fairweather, M. *See* Dianat, M. 530
- Falco, R. E. *See* Klewicki, J. C., 363
- Fujii, M., Gima, S., Tomimura, T. and Zhang, X.: Natural convection to air from an array of vertical parallel plates with discrete and protruding heat sources, 483
- Furukawa, T. *See* Obi S., 187
- Gavaises, M., Theodorakakos, A. and Bergeles, G.: Modeling wall impaction of diesel sprays, 130
- Ghahoué, L. *See* Dehmani, L., 452
- Gebhart, B. *See* Baukal, C. E., 386
- Gima, S. *See* Fujii, M., 483
- Harada, T. *See* Imao, S., 444
- Hesler, S. *See* Amano, R. S., 276
- Hishida, K. *See* Sato, Y., 202
- Homentcovschi, D., Stanescu, G. and Bejan, A.: Cooling of a two-dimensional space with one or more streams making one or more passes, 78
- Humphrey, J. A. C. *See* Devarakonda, R., 219
- Hwang, K. S., Sung, H. J. and Hyun, J. M.: Mass transfer measurements from a blunt-faced flat plate in a uniform flow, 179
- Hyun, J. M. *See* Hwang, K. S., 179
- Iacovides, H., Launder, B. E. and Li, H.-Y.: The computation of flow development through stationary and rotating U-ducts of strong curvature, 22
- Imao, S., Itoh M. and Harada, T.: Turbulent characteristics of the flow in an axially rotating pipe, 444
- Inoue, K. *See* Obi, S., 187
- Itoh, M. *See* Imao, S., 444
- Jadayel, O. C. *See* Bosman, C., 410
- Janssen, R. and Armfield, S.: Stability properties of the vertical boundary layers in differentially heated cavities, 547
- Janssen, R. *See* Armfield, S., 539
- Jarrah, M. A., Aldoss, T. K. and Al-Sarkhi, A. M.: Interaction of two opposite conical curved wall jets, 397
- Jones, T. V. *See* Spencer, M. C., 139
- Jones, W. P. and Wilie, M.: Large-eddy simulation of a plane jet in a cross-flow, 296
- Jones, W. P. *See* Dianat, M., 530
- Joye, D. D. and Wojnowich, M. J.: Aiding and opposing mixed-convection heat transfer in a vertical tube: loss of boundary condition at different Grashof numbers, 468
- Joye, D. D.: Comparison of aiding and opposing mixed convection heat transfer in a vertical tube with Grashof number variation, 96
- Jubran, B. A. and Al-Salaymeh, A. S.: Heat transfer enhancement in electronic modules using ribs and "film-cooling-like" techniques, 148
- Kadowaki, S.: Numerical study on the instability of premixed plane flames in the three-dimensional field, 557
- Kakaç, S. *See* Wang, Q., 418
- Kanniche, M. *See* Wizman, V., 255
- Kasagi, N. *See* Satake, S-i., 343
- Kasuya, K. *See* Nishino, K., 193
- Katsumata, T. *See* Okamoto, S., 211
- Kendoush, A. A.: An approximate solution of the convective heat transfer from an isothermal rotating cylinder, 439
- Kijima, M. *See* Okamoto, S., 211
- Kim, J. *See* Coleman, G. N., 333
- Kim, S. J. *See* Nield, D. A., 34
- Kim-Son, D. *See* Dehmani, L., 452
- Klewicki, J. C. and Falco, R. E.: Spanwise vorticity structure in turbulent boundary layers, 363
- Kondoh, T. *See* Abe, K., 228
- Koseff, J. R. *See* Prasad, A. K., 460
- Kuzay, T. M. *See* Sözen, M., 124
- Lage, J. L. *See* Antohe, B. V., 594
- Lai, J. C. S. and Lu, D.: Effect of wall inclination on the mean flow and turbulence characteristics in a two-dimensional wall jet, 377
- Lamballais, E., Lesieur, M. and Métais, O.: Effects of spanwise rotation on the vorticity stretching in transitional and turbulent channel flow, 324
- Lapworth, B. L., Rose, M. G. and Nedar, R. G. D.: Calculation of flow and heat transfer near the entrance to film-cooling holes using three-dimensional mesh embedding with solution adaptation, 155
- Launder, B. E. *See* Craft, T. J., 108, 245
- Launder, B. E. *See* Iacovides, H., 22
- Laurence, D. *See* Wizman, V., 255
- Le, A.-T. *See* Coleman, G. N., 333
- Lesieur, M. *See* Lamballais, E., 324
- Li, H.-Y. *See* Iacovides, H., 22
- Lin, M.-T. *See* Chen, C.-K., 604
- Liu, P.-C.: Onset of Benard-Marangoni convection in a rotating liquid layer with nonuniform volumetric energy sources, 579
- Lock, G. D. *See* Spencer, M. C., 139
- Lock, G. S. H. *See* Minhas, H., 102
- Lu, D. C. *See* Wang, C. C., 500
- Lu, D. *See* Lai J. C. S., 377
- Lund, T. S. and Moin, P.: Large-eddy simulation of a concave wall boundary layer, 290
- Masuda, S. *See* Obi, S., 187
- Megaridis, C. M. *See* Xin, J., 52, 567

- Méndez, F. and Treviño, C.: Longitudinal heat conduction effects on a vertical thin plate in a steady laminar condensation process, 517
- Meng, F. *See* Bian W., 36
- Métais, O. *See* Lamballais, E., 324
- Minhas, H. and Lock, G. S. H.: Laminar-turbulent transition in a bayonet tube, 102
- Moin, P. *See* Lund, T. S., 290
- Naccache, M. F. and Souza Mendes, P. R.: Heat transfer to non-Newtonian fluids in laminar flow through rectangular ducts, 613
- Nagano, Y. *See* Abe, K., 228
- Nedar, R. G. D. *See* Lapworth, B. L., 155
- Neve, R. S. and Yan, Y. Y.: Enhancement of heat exchanger performance using combined electrohydrodynamic and passive methods, 403
- Nield, D. A., Vafai, K. and Kim, S. J.: Closure statements on the Brinkman-Forchheimer-extended Darcy model, 34
- Nishino, K., Samada, M., Kasuya, K. and Torii, K.: Turbulence statistics in the stagnation region of an axisymmetric impinging jet flow, 193
- Obi, S., Inoue, K., Furukawa, T. and Masuda, S.: Experimental study on the statistics of wall shear stress in turbulent channel flows, 187
- Okamoto, S., Tsunoda, K., Katsumata, T., Abe, N. and Kijima, M.: Turbulent near-wakes of periodic array of square blocks on a plate, 211
- Owen, J. M. Syson, B. J., 491
- Park, K. and Watkins, A. P.: Comparison of wall spray impaction models with experimental data on drop velocities and sizes, 424
- Patnaik, V. and Perez-Blanco, H.: A study of absorption enhancement by wavy film flows, 71
- Patnaik, V. and Perez-Blanco, H.: Roll waves in falling films: an approximate treatment of the velocity field, 63
- Perez-Blanco, H. *See* Patnaik, V., 63, 71
- Pilbrow, R. G. *See* Syson, B. J., 491
- Prasad, A. K. and Koseff, J. R.: Combined forced and natural convection heat transfer in a deep lid-driven cavity flow, 460
- Price, D. C. *See* Antohe, B. V., 594
- Rieger, N. F. *See* Amano, R. S., 276
- Rodi, W. *See* Bosch, G., 267
- Rose, M. G. *See* Lapworth, B. L., 155
- Samada, M. *See* Nishino, K., 193
- Satake, S.-i. and Kasagi, N.: Turbulence control with wall-adjacent thin layer damping spanwise velocity fluctuations, 343
- Sato, Y. and Hishida, K.: Transport process of turbulence energy in particle-laden turbulent flow, 202
- Schiestel, R. *See* Elena, L., 283
- Soo, S. L.: Instability in a falling liquid film, 526
- Souza Mendes, P. R. *See* Naccache, M. F., 613
- Sözen, M. and Kuzay, T. M.: Enhanced heat transfer in round tubes with porous inserts, 124
- Spencer, M. C., Jones, T. V. and Lock G. D.: Endwall heat transfer measurements in an annular cascade of nozzle guide vanes at engine representative Reynolds and Mach numbers, 139
- Speziale, C. G. and Xu, X.-H.: Towards the development of second-order closure models for nonequilibrium turbulent flows, 238
- Stanescu, G. *See* Homentcovschi, D., 78
- Suga, K. *See* Craft, T. J., 108
- Sung, H. J. *See* Hwang, K. S., 179
- Syson, B. J., Pilbrow, R. G. and Owen, J. M.: Effect of rotation on temperature response of thermochromic liquid crystal, 491
- Taulbee, D. B. *See* Wall, K. M., 116
- Theodorakakos, A. *See* Gavaises, M., 130
- Tikhonov, A. V. *See* Danilova, G. N., 45
- Tomimura, T. *See* Fujii, M., 483
- Torii, K. *See* Nishino, K., 193
- Treviño, C. *See* Méndez, F., 517
- Tsunoda, K. *See* Okamoto, S., 211
- Vafai, K. *See* Nield, D. A., 34
- Vasseur, P. *See* Bian, W., 36
- Wall, K. M. and Taulbee, D. B.: Application of a nonlinear stress-strain model to axisymmetric turbulent swirl flows, 116
- Wang, C. C., Chiou, C. B. and Lu, D. C.: Single-phase heat transfer and flow friction correlations for microfin tubes, 500
- Wang, Q., Chen, X. J., Kakaç, S. and Ding, Y.: Boiling onset oscillation: a new type of dynamic instability in a forced-convection upflow boiling system, 418
- Wang, T. and Zhou, D.: Spectral analysis of boundary-layer transition on a heated flat plate, 12
- Washburn, R. *See* Ashgriz, N., 509
- Watkins, A. P. *See* Park, K., 424
- Weber, R. M. *See* Antohe, B. V., 594
- Wille, M. *See* Jones, W. P., 296
- Wizman, V., Laurence, D. and Kanniche, M.: Modeling near-wall effects in second-moment closures by elliptic relaxation, 255
- Wojnowich, M. J. *See* Joye, D. D., 468
- Wroblewski, D.: Effect of large-scale periodic unsteadiness on the heat transport in the downstream region of a junction boundary layer, 3
- Xin, J. and Megaridis, C. M.: Droplet spin-down in a high-temperature gas environment, 567
- Xin, J. and Megaridis, C. M.: Effects of rotating gaseous flows on transient droplet dynamics and heating, 52
- Xu, X.-H. *See* Speziale, C. G., 238
- Yan, Y. Y. *See* Neve, R. S., 403
- Yang, Y.-T. *See* Chen, C.-K., 604
- Yoo, J. S.: Dual steady solutions in natural convection between horizontal concentric cylinders, 587
- Zhang, X. *See* Fujii, M., 483
- Zhao, T. S. and Cheng, P.: Experimental studies on the onset of turbulence and frictional losses in an oscillatory turbulent pipe flow, 356
- Zhao, T. S. and Cheng, P.: The friction coefficient of a fully developed laminar reciprocating flow in a circular pipe, 167
- Zhou, D. *See* Wang, T., 12

Keyword Index

- Active control, 343
- Annular cascade, 139
- Atomization, 509
- Axisymmetric, 530
- Axisymmetric flows, 116
- Axisymmetric impinging jet flow, 193
- Axisymmetric plume, 452
- Bayonet tube, 102
- Benard-Marangoni convection, 579
- Bluff bodies, 219
- Blunt-faced flat plate, 179
- Boiling onset oscillation, 418
- Boundary layer, 12, 290, 377, 410, 439
- Boundary-layer turbulence, 363
- Cavity, 547
- Cellular flame, 557
- Channel flow, 333
- Coherent motions, 363
- Coherent structures, 343
- Computation, 296
- Concave curvature, 290
- Condensation, 517
- Conditional sampling, 3
- Conical wall jets, 397
- Conjugate heat transfer, 517
- Convectively unstable, 547
- Cooling of electronics, 594
- Counter-rotation eddies, 587
- Criminale-Erickson-Filbey (CEF) equation, 613
- Density stratification, 452
- Diesel engines, 424
- Diesel spray, 130
- Dimensionless oscillation amplitude of fluid, 167
- Direct and large-eddy simulation, 307
- Direct numerical simulation, 333, 343
- Drag reduction, 343
- Drop velocities, 424
- Droplet array, 52
- Droplet rotation, 567
- Dual cylindrical wave, 187
- Dual solutions, 587
- Duct flow computations, 22
- Dynamic instabilities, 418
- Electrohydrodynamic (EHD), 403
- Electronic cooling, 78, 474
- Electronic equipment, 483
- Empirical correlations, 386
- Energy balance, 547
- Enhancement, 403
- Experimental model, 45
- Fibrous, 124
- Film cooling, 148
- Film-cooling holes, 155
- Flame impingement, 386
- Flame instability, 557
- Flow of viscoelastic liquids, 613
- Flow pattern selection, 78
- Fluid mechanics, 296
- Forced and natural convection, 460
- Forced convection through rectangular ducts, 613
- Forced convection, 78, 386, 439
- Free convection, 604
- Free turbulent flow, 228
- Friction coefficient, 167

- Frictional losses, 356
 Fully developed channel flow, 307
 Grashof number variation, 96, 468
 Half-width growth, 397
 Heat conduction, 410, 483
 Heat exchanger, 102
 Heat exchangers, 403, 500
 Heat transfer enhancement, 96, 468
 Heat transfer, 12, 124, 139, 386, 483, 500
 Heat-momentum analogy, 500
 Heat-transfer enhancement, 148
 IC package, 483
 Impaction models, 424
 Impinging flows, 108
 Impinging jets, 509, 530
 Jet decay, 397
 Junction boundary layers, 3
k-e model, 530
 Kinetic Reynolds number, 167
 Kolmogorov scale, 228
 Laminar, 410
 Laminar-turbulent transition, 102
 Large-eddy simulation, 290
 Laser Doppler velocimeter (LDV), 211, 444
 Lattice-Boltzmann scheme, 307
 LES, 296
 Lid-driven cavity flow, 460
 Linear stability analysis, 579
 Liquid crystals, 139
 Liquid film flow, 526
 Local wall shear stress, 187
 Loss, 410
 Low Reynolds number model, 228
 Mass transfer, 179
 Merged jet, 397
 Mesh embedding, 155
 Microfin tube, 500
 Microporous heat exchangers, 594
 Modeling, 130
 Multiple time-scale model, 202
 Naphthalene sublimation technique, 179
 Natural convection, 386, 474, 483, 539, 547, 587
 Nonequilibrium turbulence, 238
 Nonlinear eddy-viscosity model, 108
 Non-Newtonian fluids, 604
 Nozzle guide vane, 139
 Numerical analysis, 483
 Numerical simulation, 267, 539, 557
 Obstructions, 219
 Onset of convection, 579
 Onset of turbulence, 356
 Open cavity, 474
 Optical measurement, 187
 Orthogonal rotation, 22
 Oscillatory flow, 356
 Parallel plates, 483
 Particle-tracking velocimetry, 193
 Passive, 403
 Pipe flow, 444
 Pool boiling, 45
 Porous coating, 45
 Porous media, 124, 594
 Pressure drops, 500
 Radiation, 386
 Reattachment, 211
 Reciprocating flow, 167
 Relaxation model, 238
 Reynolds stress, 397, 444
 Rotating cylinder, 439
 Rotating flow, 439
 Rotating pipe, 444
 Rotation, 52, 283, 491
 Rothalpy, 410
 Second-moment closure, 228, 530
 Second-order closures, 238
 Sherwood number, 179
 Single-phase, 500
 Size distribution, 509
 Solution adaptation, 155
 Spectral analysis, 12
 Spindown, 567
 Spinning, 52
 Splash plate, 509
 Square block, 211
 Stability, 539
 Stability of thin film flow, 526
 Stagnation region, 193
 Stirred tank reactors, 307
 Streamline curvature, 108
 Stress relation, 116
 Strong curvature, 22
 Swirling flow, 444
 Taylor-Görtler vortices, 290
 Temperature field across porous layer, 45
 Temperature measurement, 491
 Thermal boundary layer, 539
 Thermocapillary flow, 567
 Thermochromic liquid crystals, 460, 491
 Three-dimensional boundary layers, 333
 Transient dynamics and heating, 52
 Transient heating, 567
 Turbomachine, 410
 Turbulence, 211, 219, 296, 333, 444
 Turbulence model, 108
 Turbulence modeling, 116, 283
 Turbulence models, 267
 Turbulence modification, 202
 Turbulence statistics, 187, 193
 Turbulent, 410
 Turbulent flow, 193, 211, 283, 290
 Turbulent heat transport, 3
 Turbulent kinetic energy, 193
 Turbulent shear flow, 377
 Turbulent structure, 452
 Turbulent transition, 12
 Two-dimensional, 530
 Two-dimensional channel flow, 187
 Two-equation heat transfer model, 228
 Two-phase flow, 202
 Unsteady flows, 3
 Upwind control volumes, 155
 Velocity distribution, 211
 Velocity field, 530
 Vertical mixed convection, 96, 468
 Viscosity, 410
 Vortex shedding, 267
 Vorticity, 363
 Wake flows, 219
 Wall angle, 377
 Wall impaction, 130
 Wall influence, 267
 Wall jet, 377
 Wall spray, 424
 Wall turbulence, 343
 Wall turbulent flow, 228
 Wavy vertical plate, 604