

Bibliografia

- [1] ADAMS, N.. **The role of deconvolution and numerical discretization in subgrid-scale modelling.** In: Geurts, F.; Métais, editors, DIRECT AND LARGE-EDDY SIMULATION IV, p. 311–320. Kluwer, 2001.
- [2] AUPOIX, B.. **Subgrid scale models for homogeneous anisotropic turbulence.** In: PROCEEDINGS OF THE EUROMEC COLLOQUIUM 199, DIRECT AND LARGE EDDY SIMULATION OF TURBULENCE, volumen 15 de **Notes on numerical fluid mechanics**, p. 36–66. Vieweg, 1985.
- [3] BAGGETT, J. S.. **On the feasibility of merging LES with RANS for the near-wall region of attached turbulent flows.** In: ANNUAL RESEARCH BRIEFS, p. 267, Palo Alto, California, 1998. Center for Turbulence Research, Stanford University.
- [4] BALARAS, E.; BENOCCI, C.. **Subgrid-scale models in finite-difference simulations of complex wall bounded flows.** In: AGARD CP, volumen 551, p. 2.1–2.5, Neuilly-Sur-Seine, France, 1994. AGARD.
- [5] BALARAS, E.; BENOCCI, C. ; PIOMELLI, U.. **Two-layer approximate boundary conditions for large eddy simulations.** AIAA Journal, 34:1111, 1996.
- [6] BALARAS, E.. **Modeling complex boundaries using an external force field on fixed cartesian grids in large-eddy simulations.** Computers & Fluids, 33:375–404, 2004.
- [7] BLAISDELL, G. A.; SPYROPOULOS, E. T. ; QIN, J. H.. **The effect of the formulation of nonlinear terms on aliasing errors in spectral methods.** Applied Numerical Mathematics, 21(3):207–219, 1996.

- [8] CABOT, W.. **Large-eddy simulations with wall models.** In: ANNUAL RESEARCH BRIEFS, p. 41, Palo Alto, California, 1995. Center for Turbulence Research, Stanford University.
- [9] CABOT, W.; MOIN, P.. **Approximate wall boundary conditions in the large-eddy simulation of high Reynolds number flow.** Flow Turb. Combust., 63:269, 1999.
- [10] CHAPMAN, D. R.. **Computational aerodynamics development and outlook.** AIAA Journal, 17(12):1293, 1979.
- [11] CHOW, F. K.; MOIN, P.. **A further study of numerical errors in large-eddy simulations.** Journal of Computational Physics, 184:366–380, 2003.
- [12] CIOFALO, M.. **Large-eddy simulation: A critical survey of models and applications.** Adv. Heat Transf., 25:321, 1994.
- [13] CLARK, R. A.; FERZIGER, J. H. ; REYNOLDS, W. C.. **Evaluation of subgrid-scale models using an accurately simulated turbulent flow.** Journal of Fluid Mechanics, 91(1):1–16, 1979.
- [14] CODINA, R.. **Stabilization of incompressibility and convection through orthogonal sub-scales in finite elements methods.** Computational Methodos Applied to Mechanical Engineering, 190(13-14):1579–1599, 2000.
- [15] COLLIE, S.; JACKSON, P. S. ; GERRITSEN, M.. **Turbulence modelling of the flat plate at shallow incidence.** Personal Communication, 2003.
- [16] COLLIE, S.; GERRITSEN, M. ; JACKSON, P.. **Performance of two-equation turbulence models for flat plate flows with leading edge bubbles.** Journal of Fluids Engineering, 2006. in Press.
- [17] COMTE-BELLOT, G.; CORRSIN, S.. **The use of a contraction to improve the isotropy of grid-generated turbulence.** Journal of Fluid Mechanics, 25:657–682, 1966.
- [18] CRABTREE, L. F.. **The formation of regions of separated flow on wing surfaces.** Technical Report RM-3122, Aeronautical Research Council, London, 1957.

- [19] CROMPTOM, M. J.; BARRET, R. V.. **Investigation of the separation bubble formed behind the sharp leading edge of a flat plate at incidence.** In: PROC. INSTN MECH. ENGRS, volumen 134, 2000.
- [20] CROMPTOM, M.. **The Thin Airfoil Leading Edge Separation Bubble.** PhD thesis, Department of Aerospace Engineering University of Bristol, 2001.
- [21] DEARDORFF, J. W.. **A numerical study of three-dimensional turbulent channel flow at large Reynolds numbers.** Journal of Fluid Mechanics, 41:453, 1970.
- [22] DUBIEF, Y.; DELCAYRE, F.. **On coherent-vortex identification in turbulence.** Journal of Turbulence, 1(011), 2000.
- [23] DUCROS, F.. **Simulations numériques directes et des grandes échelles de couches limites compressibles.** PhD thesis, Grenoble, France, 1995.
- [24] ESWARAN, V.; POPE, S. B.. **An examination of forcing in direct numerical simulations of turbulence.** Computers and Fluids, 16(3):257–278, 1988.
- [25] FORNBERG, B.. **Numerical study of 2-d turbulence.** Journal of Computational Physics, 25(1):1–31, 1977.
- [26] FUREBY, C.; TABOR, G.; WELLER, H. G. ; GOSMAN, A. D.. **A comparative study of subgrid scale models in homogeneous isotropic turbulence.** Physics of Fluids, 9(5):1416–1429, 1997.
- [27] FUREBY, C.; GRINSTEIN, F. F.. **Monotonically integrated large eddy simulation of free shear flows.** AIAA Journal, 37(5):544–556, 1999.
- [28] FUREBY, C.; GRINSTEIN, F. F.. **Recent progress on MILES for high Reynolds-number flows.** Journal of Fluids Engineering, 124(4):848–861, December 2002.
- [29] GASTER, M.. **The structure and behaviour of laminar separation bubbles.** In: AGARD, número CP-4, Part 2, p. 813–854, 1966.
- [30] GAULT, D.. **An experimental investigation of regions of separated laminar flow.** Technical report, NACA TN, 1955.

- [31] GAULT, D. E.. An investigation at low speed of the flow over a simulated flat plate at small angles of attack using pitot static and hot-wire probes. Technical Report TN-3876, NACA, 1957.
- [32] GERMANO, M.; PIOMELLI, U.; MOIN, P. ; CABOT, W. H.. A dynamic subgrid-scale eddy viscosity model. *Phys. Fluids A*, 3(7):1760–1765, 1991.
- [33] GERMANO, M.. Turbulence: The filtering approach. *J. Fluid Mech.*, 238:325–336, 1992.
- [34] GERMANO, M.. From RANS to DNS: Towards a bridging model. In: Voke, P.; Sandham, N. ; Kleiser, L., editors, DIRECT AND LARGE-EDDY SIMULATION III, PROCEEDINGS OF THE ISAAC NEWTON INSTITUTE SYMPOSIUM / ERCOFTAC WORKSHOP, volumen 7, p. 225–236. Kluwer, 1999.
- [35] GERMANO, M.. On the physical effects of variable filtering lenghts and times in LES. In: Friedrich, R.; Rodi, W., editors, ADVANCES IN LES OF COMPLEX FLOWS, PROCEEDINGS OF THE EUROMECH COLLOQUIUM 412, p. 3–11. Kluwer, 2000.
- [36] GOLUB, G. H.; VAN LOAN, C. F.. Matrix Computations. Johns Hopkins, third edition edition, 1996.
- [37] GRIGORIADIS, D. G. E.; BARTZIS, J. G. ; GOULAS, A.. Efficient treatment of complex geometries for large eddy simulations of turbulent flows. *Computers & Fluids*, 33:201–222, 2004.
- [38] GROTZBACH, G.. Direct numerical and large eddy simulation of turbulent channel flows. In: Chereminisoff, N. P., editor, ENCICLOPEDIA OF FLUID MECHANICS, p. 1337. Gulf Publ., West Orange, NJ, 1987.
- [39] GUERMOND, J. L.. Stabilization of Galerkin approximations of transport equations by subgrid modeling. *M2AN*, 33(6):1293–1316, 1999.
- [40] GUERTS, B.. Elements of Direct and Large Eddy Simulations. Edwards, 2004.
- [41] HOFFMAN, G.; BENOCCI, C.. Approximate wall boundary conditions for large-eddy simulations. In: (Ed.), R. B., editor,

- ADVANCES IN TURBULENCE V, p. 222. Kluwer Academic Publishers, 1995.
- [42] HORTON, H. P.. **A semi-empirical theory for the growth and bursting of laminar separation bubbles.** Technical Report ARC CP-1073, Aeronautical Research Council, London, 1969.
 - [43] HORIUTI, K.. **A proper velocity scale for modeling subgrid-scale eddy viscosities in large eddy simulation.** Phys. Fluids A, 5(1):146–157, 1993.
 - [44] HUGHES, T. J. R.; MAZZEI, L. ; OBERAI, A. A.. **The multiscale formulation of large eddy simulation: Decay of homogeneous isotropic turbulence.** Physics of Fluids, 12(2):505–512, February 2001.
 - [45] ISSA, R.. **Solution of the implicit discretized fluid flow equations by operator-splitting.** Journal of Computational Physics, 62:40–65, 1985.
 - [46] JASAK, H.. **Error analysis and estimation for the finite volume method with application to fluid flows.** PhD thesis, Imperial College, London, 1996.
 - [47] JONES, B. M.. **Stalling.** Journal of Royal Aerodynamic Society, 38(285):741–770, 1934.
 - [48] KANEDA, Y.; ISHIHARA, T.. **Energy dissipation rate and energy spectrum in high resolution direct numerical simulations of turbulence in a periodic box.** Physics of Fluids, 15(2):21–24, February 2003.
 - [49] KOLMOGOROV, A.. **Dissipation of energy in a locally isotropic turbulence.** Doklady Akad. Nauk SSSR, 32(141), 1941. Tradução para o inglês em: American Mathematical Society Translations 1958, Series 2, Vol 8, p. 87, Providence R.I.
 - [50] KRAVCHENKO, A. G.; MOIN, P. ; MOSER, R.. **Zonal embedded grids for numerical simulations of wall-bounded turbulent flows.** J. of Computational Physics, 127:412, 1996.
 - [51] KRAVCHENKO, A. G.; MOIN, P.. **On the effect of numerical errors in large eddy simulations of turbulent flows.** Journal of Computational Physics, 131:310–322, 1997.

- [52] KRAVCHENKO, A. G.; MOIN, P. ; E SHARIFF, K.. **B-spline method and zonal grids for simulations of complex turbulent flows.** Journal of Computational Physics, 151:757–789, 1999.
- [53] LEONARD, B. P.. **A stable accurate convective modeling procedure based on quadratic upstream interpolation.** Computer methods in Appl. Mechanics and Engineering, 19:59–88, 1979.
- [54] LESIEUR, M.; MÉTAIS, O. ; COMTE, P.. **Large-Eddy Simulations of Turbulence.** Cambridge University Press, 2005.
- [55] LIEBECK, R. H.. **Laminar separation bubbles and airfoil design at low Reynolds number.** In: AIAA, número J-92-2735-CP, p. 441–455, 1992.
- [56] LILLY, D. K.. **A proposed modification of the germano subgrid-scale closure method.** Phys. Fluids A, 4(3):633–635, 1992.
- [57] LIMA E SILVA, A. L. F.; SILVEIRA-NETO, A. ; DAMASCENO, J. J. R.. **Numerical simulation of two-dimensional flows over a circular cylinder using the immersed boundary method.** Journal of Computational Physics, (189):351–370, 2003.
- [58] MASON, P. J.; CALLEN ; S., N.. **On the magnitude of the subgrid-scale eddy coefficient in large-eddy simulations of channel flow.** J. Fluid Mech, 162:439, 1986.
- [59] MATHIEU, J.; SCOTT, J.. **An Introduction to Turbulent Flow.** Cambridge University Press, first edition edition, 2000.
- [60] MCCULLOUGH, G. B.; GAULT, D. E.. **Examples of three representative types of airfoil stall at low speed.** Technical Report TN-2502, NACA, 1951.
- [61] MCGREGOR, I.. **Regions of localized boundary layer separation and their role in the nose-stalling of aerofoils.** PhD thesis, Queen Mary College, University of London, 1954.
- [62] MENTER, F. R.. **Two-equation eddy-viscosity turbulence models for engineering applications.** AIAA Journal, 32(8):1598–1605, 1994.
- [63] MENEVEAU, C.; LUND, T. S.. **The Smagorinsky model and scale-dependent coefficients in the viscous range of turbulence.** Phys. Fluids, 9(12):3932–3934, 1997.

- [64] MITTAL, R.; MOIN, P.. **Suitability of upwind-biased finite difference schemes for large-eddy simulation of turbulent flows.** AIAA Journal, 35:1415–1417, 1997.
- [65] MOHAMED, M. S.; LARUE, J. C.. **The decay power law in grid-generated turbulence.** Journal of Fluid Mechanics, 219:195–214, 1990.
- [66] MOIN, P.. **Advances in large eddy simulation methodology for complex flows.** International Journal of Heat and Fluid Flow, 23:710–720, 2002.
- [67] NAGARAJAN, S.; LELE, S. K. ; FERZIGER, J. H.. **A robust high-order compact method for large eddy simulation.** Journal of Computational Physics, 191:392–419, 2003.
- [68] NEWMAN, B. G.; TSE, M. C.. **Incompressible flow past a flat plate aerofoil with leading edge separation bubble.** Aeronautical Journal, (96):57–64, 1992.
- [69] NIECKELE, A. O.; NACCACHE, M. F. ; GOMES, M. S. P.. **Numerical simulation of a three dimensional aluminum melting furnace.** Journal of Energy Resources Technology, 126(1):72–81, 2004.
- [70] NIKITIN, N.; NICOUD, F.; WASISTHO, B.; SQUIRES, K. ; SPA-LART, P.. **An approach to wall modeling in large-eddy simulations.** Phys. Fluids, 12:1629, 2000.
- [71] O'MEARA, M. M.; MUELLER, T. J.. **Laminar separation bubble characteristics on an airfoil at low Reynolds numbers.** AIAA Journal, 25(8):1033–1041, 1987.
- [72] OPENFOAM. <http://www.opencfd.co.uk/openfoam/>.
- [73] OWEN, P. R.; KLANFER, L.. **On the laminar boundary-layer separation from the leading edge of a thin aerofoil.** Technical Report CP 220, ARC, 1953.
- [74] PATANKAR, S.. **Numerical heat transfer and fluid flow.** Hemisphere, New York, 1980.
- [75] PAULEY, L. L.; PARVIZ, M. ; REYNOLDS, W. C.. **The structure of two-dimensional separation.** Journal of Fluid Mechanics, (220):397–411, 1990.

- [76] PESKIN, C. S.. **Flow patterns around heart valves: a numerical method.** Journal of Computational Physics, 10:252–271, 1972.
- [77] PESKIN, C. S.. **Numerical analysis of blood flow in the heart.** Journal of Computational Physics, 25:220–252, 1977.
- [78] PIOMELLI, U.; FERZIGER, J.; MOIN, P. ; KIM, J.. **New approximate boundary conditions for large eddy simulations of wall-bounded flows.** Phys. Fluids, A(1):1061, 1989.
- [79] PIOMELLI, U.. **Large-eddy simulation: achievements and challenges.** Progress in Aerospace Sciences, 35:335–362, 1999.
- [80] PIOMELLI, U.; BALARAS, E.. **Wall-layer models for large-eddy simulations.** Annual Review of Fluid Mechanics, 34:349, 2002.
- [81] POPE, S. B.. **Turbulent Flows.** Cambridge, 2000.
- [82] ROY, S.; BAKER, A. J.. **Nonlinear, subgrid embedded finite-element basis for accurate, monotone, steady cfd solutions.** Numerical Heat Transfer, 31:135–175, 1997.
- [83] SAGAUT, P.. **Numerical simulations of separated flows with subgrid models.** La Recherche Aérospatiale, 1:51–63, 1996.
- [84] SAGAUT, P.. **Large Eddy Simulation for Incompressible Flows, An Introduction.** Springer, second edition edition, 2002.
- [85] SCHUMANN, U.. **Subgrid scale model for finite difference simulation of turbulent flows in plane channels and annuli.** Journal of Computational Physics, 18:376, 1975.
- [86] SCHMIDT, R. C.; KERSTEIN, A. R.; WUNSCH, S. ; NILSEN, V.. **Near wall LES closure based on one-dimensional turbulence modeling.** Journal of Computational Physics, 186:317–355, 2003.
- [87] SHARIFF, K.; MOSER, R.. **Two dimensional mesh embedding for b-spline.** Journal of Computational Physics, 145:471, 1998.
- [88] SMAGORINSKY, J.. **General circulation experiments with the primitive equations. i: the basic experiment.** Monthly Weather, Rev. 91(3):99–165, 1963.
- [89] SPALART. **A one equation turbulence model for aerodynamic flows.** La Recherche Aerospaciale, 1:5–21, 1994.

- [90] SPALART, P. R.; JOU, W. H.; STRELETS, M. ; ALLMARAS, S. R.. **Comments on the feasibility of LES for wings, and on a hybrid RANS/LES approach.** In: FIRST AFOSR INTERNATIONAL CONFERENCE ON DNS/LES, Ruston, Louisiana, USA, 1997.
- [91] SPALART, P. R.. **Strategies for turbulence modelling and simulations.** International Journal of Heat and Fluid Flow, 21:252–263, 2000.
- [92] TSENG, Y. H.; FERZIGER, J.. **A ghost-cell immersed boundary method for flow in complex geometry.** Journal of Computational Physics, 192:593–623, 2003.
- [93] TSUBOKURA, M.. **Proper representation of the subgrid-scale eddy viscosity for the dynamic procedure in large eddy simulation using finite difference method.** Physics of Fluids, 13(2):500–504, 2001.
- [94] VASILYEV, O. V.; LUND, T. S.. **A general theory of discrete filtering for LES in complex geometry.** In: ANNUAL RESEARCH BRIEFS, Palo Alto, California, 1997. Center for Turbulence Research, NASA Ames/Stanford University.
- [95] VASILYEV, O. V.; LUND, T. S. ; MOIN, P.. **A general class of commutative filters for LES in complex geometries.** Journal of Computational Physics, 146:82–104, 1998.
- [96] WARD, J. W.. **The behaviour and effects of laminar separation bubbles on aerofoils in incompressible flow.** Journal of Royal Aerodynamic Society, 67:783–790, 1963.
- [97] WILCOX, D. C.. **Reassessment of the scale-determining equation for advanced turbulence models.** AIAA Journal, 26, 1988.
- [98] YOSHIZAWA, A.; HORIUTI, K.. **A statistically-derived subgrid-scale kinetic energy model for the large-eddy simulation of turbulent flows.** Journal of the Physical Society of Japan, 54(8):2834–2839, 1985.
- [99] YOSHIZAWA, A.; KOBAYASHI, K.; KOBAYASHI, T. ; TANIGUCHI, N.. **A non-equilibrium fixed-parameter subgrid-scale model obeying the near-wall asymptotic constraint.** Physics of Fluids, 12(9):2338–2344, 2000.

- [100] YULE, A. J.; DAMOU, M. ; KOSTOPOULOS, D.. **Modeling confined jet flow.** International Journal of Heat and Fluid Flow, 14(1), 1992.