

Useful references

- There is vast amount of literature in the field of FVM/CFD and numerical analysis. We will give you some of our favorite references, which are closed related to what you will find in OpenFOAM®.
 - **The Finite Volume Method in Computational Fluid Dynamics: An Advanced Introduction With OpenFOAM and Matlab**
F. Moukalled, L. Mangani, M. Darwish. 2015, Springer-Verlag
 - **Finite Volume Methods for Hyperbolic Problems**
R. Leveque. 2002, Cambridge University Press
 - **Computational Gasdynamics**
C. Laney. 1998, Cambridge University Press
 - **Computational Techniques for Multiphase Flows**
G. H. Yeoh, J. Tu. 2009, Butterworth-Heinemann
 - **An Introduction to Computational Fluid Dynamics**
H. K. Versteeg, W. Malalasekera. 2007, Prentice Hall
 - **Computational Fluid Dynamics: Principles and Applications**
J. Blazek. 2006, Elsevier Science
 - **Computational Methods for Fluid Dynamics**
J. H. Ferziger, M. Peric. 2001, Springer
 - **Advanced Computational Fluid and Aerodynamics**
P. G. Tucker
 - **Numerical Heat Transfer and Fluid Flow**
S. Patankar. 1980, Taylor & Francis
 - **Numerical Methods for Partial Differential Equations: Finite Difference and Finite Volume Methods**
S. Mazumder. 2015, Academic Press.

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 - **Iterative Methods for Sparse Linear Systems**
Y. Saad. 2003, SIAM.
 - **Matrix analysis and applied linear algebra**
C. D. Meyer. 2010, SIAM.
 - **A Finite Volume Method for the Prediction of Three-Dimensional Fluid Flow in Complex Ducts**
M. Peric. PhD Thesis. 1985. Imperial College, London
 - **Error analysis and estimation in the Finite Volume method with applications to fluid flows**
H. Jasak. PhD Thesis. 1996. Imperial College, London
 - **Computational fluid dynamics of dispersed two-phase flows at high phase fractions**
H. Rusche. PhD Thesis. 2002. Imperial College, London
 - **High Resolution Schemes Using Flux Limiters for Hyperbolic Conservation Laws**
P. K. Sweby. SIAM Journal on Numerical Analysis, Vol. 21, No. 5, pp. 995-1011, 1984.
 - **A Pressure-Based Method for Unstructured Meshes**
S. R. Mathur, J. Y. Murthy. Numer. Heat Transfer, Vol. 31, pp. 195-216, 1997.
 - **A calculation procedure for heat, mass and momentum transfer in three-dimensional parabolic flows**
S. V. Patankar, D. B. Spalding. Int. J. Heat Mass Transfer, 15, pp. 1787-1806, 1972.
 - **Solution of the implicitly discretized fluid flow equations by operator-splitting**
R. I. Issa. J. Comput. Phys., 62, pp. 40-65, 1985.
 - **Further discussion of numerical errors in CFD**
J. H. Ferziger, M. Peric. Int. J. Numer. Methods in Fluids, Vol. 23, pp. 1263-1274, 1996.

CFD best practices guidelines

- ERCOFTAC best practice guidelines (aerospace CFD, automotive CFD, turbomachinery CFD, electronic cooling CFD, heat transfer).
- NAFEMS best practice guidelines.
- MARNET CFD best practice guidelines for marine applications of CFD.
- NPARC alliance CFD verification and validation archive.
- NASA Turbulence Modeling Resource.
- ERCOFTAC classic collection database for validation and verification.
- NASA CFL3D documentation and validation cases.
- Documentation of commercial CFD solver (e.g., Ansys Fluent, Ansys CFX, Star-CCM+, NUMECA, and so on).

- **Verification and validation in computational science and engineering**
P. J. Roache, Hermosa Publishers
- **Verification and Validation in Scientific Computing**
W. L. Oberkampf , C. J. Roy, Cambridge University Press.

Turbulence modeling

- **Turbulent Flows**
S. B. Pope
- **Turbulence Modeling for CFD**
D. C. Wilcox
- **Turbulent Fluid Flow**
P. S. Bernard
- **Statistical Turbulence Modelling for Fluid Dynamics – Demystified**
M. Leschziner
- **Turbulence: An Introduction for Scientists and Engineers**
P. A. Davidson
- **Large Eddy Simulation for Incompressible Flows**
P. Sagaut
- **A First Course in Turbulence**
H. Tennekes and J. L. Lumley
- **Boundary-Layer Theory**
H. Schlichting
- Turbulence Modelling - http://www.tfd.chalmers.se/~lada/comp_turb_model/
Lars Davidson
- <https://turbmodels.larc.nasa.gov/>
- <http://www3.dicca.unige.it/guerrero/turbulence2020/lectures.html>

Multiphase flows

- **Computational Techniques for Multiphase Flows**
G. H. Yeoh, J. Tu. 2009, Butterworth-Heinemann
- **Multiphase Flow Analysis Using Population Balance Modeling: Bubbles, Drops and Particles**
G. H. Yeoh, C. P Cheung, J. Tu. 2013, Butterworth-Heinemann
- **Turbulence Modeling for CFD**
D. Wilcox. 2006, DCW Industries.
- **Error analysis and estimation in the Finite Volume method with applications to fluid flows.**
H. Jasak. PhD Thesis. 1996. Imperial College, London.
- **Computational fluid dynamics of dispersed two-phase flows at high phase fractions**
H. Rusche. PhD Thesis. 2002. Imperial College, London.
- **Towards the numerical simulation of multi-scale two-phase flows**
H. Marschall. PhD Thesis. 2011. Technische Universität München.
- **Derivation, Implementation, and Validation of Computer Simulation Models for Gas-Solid Fluidized Bed**
B. van Wachem. PhD Thesis. 2000, TUDelft.
- **Gas-Particle flow in a vertical pipe with particle-particle intractions**
J. L. Sinclair, R. Jackson AIChE Journal. Volume 35, Issue 9, 1473-1486, September 1989