

# Numerical Simulation of Multiphase Flows

# شبیه‌سازی عددی جریان‌های چندفازی

## Contents

## سرفصل

### Part I General considerations

### بخش ۱ ملاحظات عمومی

1. Introduction

۱. مقدمه

2. Basic concepts and key definitions

۲. مفاهیم پایه و تعاریف کلیدی

### Part II Direct Numerical Simulation (DNS)

### بخش ۲ شبیه‌سازی عددی مستقیم

3. Instantaneous equations of multiphase flows

۳. معادلات لحظه‌ای جریان‌های چندفازی

4. Direct numerical simulation algorithms

۴. الگوریتم‌های شبیه‌سازی عددی مستقیم

### Part III Eulerian Statistical Simulation (ESS)

### بخش ۳ شبیه‌سازی آماری اویلری

5. Eulerian averaged equations and models

۵. معادلات متوسط اویلری و مدل‌سازی

6. Numerical simulation using ESS

۶. شبیه‌سازی عددی با روش متوسط اویلری

### Part IV Eulerian-Lagrangian Statistical Simulation (ELSS)

### بخش ۴ شبیه‌سازی آماری اویلری-لاگرانژی

7. Key definitions and concepts - particles

۷. تعاریف و مفاهیم کلیدی - ذرات

8. ELSS governing equations

۸. معادلات روش‌های اویلری-لاگرانژی

9. Fluid-particle interactions

۹. برهم‌کنش سیال و ذره

10. Particle-particle interactions

۱۰. برهم‌کنش ذرات

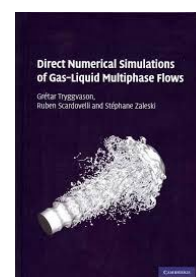
11. Particle boundary conditions

۱۱. شرایط مرزی ذرات

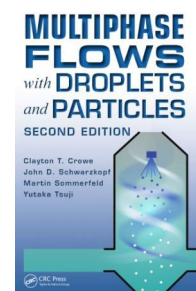
## Main References

### Books

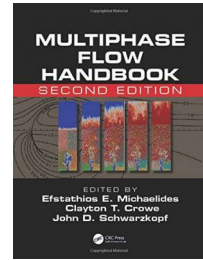
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[2] Crowe, C.T., Schwarzkopf, J.D., Sommerfeld, M., and Tsuji, Y., Multiphase Flows with Droplets and Particles, 2nd Edition, CRC press, 2011.

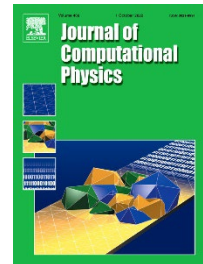


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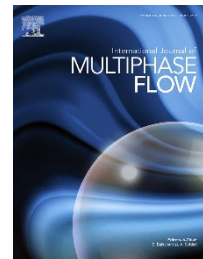


### Journals and papers

- Journal of Computational Physics (Journal, Elsevier)



- International Journal of Multiphase Flow (Journal, Elsevier)



- Annual Reviews of Fluid Mechanics (Journal)



### Course material:

My github: <https://github.com/ehsan-amani/Courses/tree/main/NSMF>

### Website:

CFD of Multiphase flows group: <https://sites.google.com/view/dramani>

## Other References

### Books

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### Papers

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- Behbahani, M. A., et al. "Tuning a multi-fluid model for gas lift simulations in wells." Chemical Engineering Research and Design 90.4 (2012): 471-486. (Amani2012b)
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- Scardovelli, Ruben, and Stephane Zaleski. "Analytical relations connecting linear interfaces and volume fractions in rectangular grids." *Journal of Computational Physics* 164.1 (2000): 228-237.
- Waterson, Nicholas P., and Herman Deconinck. "Design principles for bounded higher-order convection schemes—a unified approach." *Journal of Computational Physics* 224.1 (2007): 182-207.

## **Assessment**

Homework	30%
Projects	50%
Final exam	20%

*Special thanks to professor **Gretar Tryggvason**, master of my master. With what I learned from him and what he generously shared on the Net, the preparation of this course material became possible.*



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