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| Лабораторные задания |
| 1. An introduction to modeling and simulation. |
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| 2. Matrix sweep method. |
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| 3. High-Order Fractional-Step Methods |
| 4. Time Discretizations. Adams-Bashforth Methods. Adams-Moulton Methods. |
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| 5. Furies Method for Three Dimensional Poisson Equations. |
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| 6. Three Classical filters for LES. |
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| 7. Decomposition of the non-linear term. Leonard’s decomposition. |
| **Exercises 10.3-10.12** |
| 8. Improvement of models in the physical space. Dynamic procedures for computing the constants. Germano-Lilly dynamic procedure. |
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| 9. Deterministic statistical models. Localized dinamic model with energy equation. |
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| 10. Anisotropic models. Model based on splitting technique. |
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| 11. Non-linear models. Dynamic non-linear model. |
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| 12. Scale similarity models. Dynamic similarity model. |
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| 13. Differential subgrid stress models. Deardorff model. Subgrid viscosity models.  |
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| 14. Mixed modeling. One parameter mixed dynamic model. |
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| 15. Incompressible Navier-Stokes equations with turbulence models. |
| **Exercises 13.1-13.45** |