Fundamental Fluid Mechanics

Good Text Book Material

V H Arakeri

Fluid Mechanics for Engineers
P N Chatterjee
MacMillan India Limited
Vol. 1, pp. 367. Rs.143
Vol.2, pp.306. Rs.130

Fluid Mechanics for Engineers in two volumes by P N Chatterjee contains standard material for a first level course in fluid mechanics for Civil, Mechanical, Aeronautical and Chemical Engineering students. It is however not suitable for Applied Science students like those majoring in Physics or Mathematics and is not a good reference book for practising engineers. The first volume covers material suitable for a beginner's course; whereas the second volume deals with more advanced topics, but at an elementary level. Considering both volumes, the coverage is quite exhaustive and there are two chapters on nonuniform flow in open channels and unsteady flow in conduits, surge and waterhammer which are not commonly found in standard text books on fluid mechanics. The latter topics should be of special interest to civil engineering students.

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is of very good quality; in particular, the examples solved should enable students to grasp the essentials quite well. The problems at the end of each chapter, are however of routine nature and could have been accompanied with more illustrations.

Some of the weak points in the two volumes are: there is no justification for including digital computer application on the cover page, in chapter 5 on application of momentum equation the fact that the control volume in each problem has to be chosen judiciously has not been stressed. It is important to choose the control volume boundaries where the streamlines are straight and parallel; in fact, the author has chosen the wrong control volume in Figures 8, 7 to analyse the flow through a Borda's mouthpiece. Similarly, the use of tables in solving problems in compressible flow has not been encouraged; this is essential since many of the compressible flow relations have multiple solutions. It would also have been useful to demonstrate the application of unsteady Bernoulli equation with simple examples. There is a large

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number of typographical errors. The shortcomings noted are, however, minor compared to the positive aspects.

On the whole, I strongly recommend these as text books for undergraduate engineering students at the beginners' level. They could be used as reference material by postgraduate students who would like to brush up on their fundamentals. The first seven chapters of Vol.1 can form the core material and the other chapters can be included depending upon the time and taste of the instructor for a particular course. Considering the material covered the cost of the books is quite reasonable.

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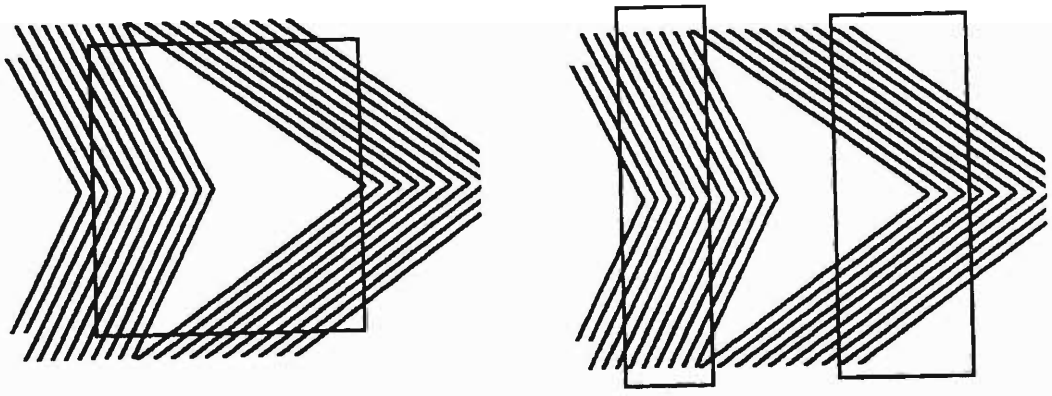
Zolliner – Poggendorff Illusion



The square on the left and the rectangle in the middle exhibit a combination of two different illusions. Some of their sides appear bent due to cross hatching. This is Zolliner's illusion. Also some of the lines of the cross hatch appear broken and discontinuous at the edges of these figures. This is Poggendorff's illusion. Interestingly both these illusions are nearly absent in the rectangle on the right.

— G S Ranganath