of these points in the Ω-plane which gave rise to infinite adverse velocity gradients could be accommodated.

Because of the singularity representation in the Ω-plane of the upstream and downstream conditions in the z-plane, the diffuser, consequently, will be of (doubly) infinite length. The necessary shortening has been shown to be easily accomplished in a way in which the upstream and downstream velocities are specified to be within a small percentage of their asymptotic values.

Although the present analysis is limited to incompressible flows, it is envisaged that a later investigation will extend the method to compressible flows, made possible by the linearity of the flow equations in the Ω-plane. The subsequent conformal transformation will, of course, change the form of the equation, but that might be more than compensated for in easy specification of boundary conditions in the t-plane.

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BOOK REVIEWS

Two-phase Flow Dynamics

Edited by A. E. Bergles and S. Ishigai

This book contains twenty-six papers presented at a Japanese–US Seminar on two-phase dynamics held in Kobe, Japan on 31 July–3 August 1979. The papers can be categorised into: surveys, flow regimes, transient analysis, pressure wave propagation, flow instability, choking flow, and loss-of-coolant accidents (LOCAs) in light-water reactors and liquid-metal-coolant fast breeder reactors. The majority of the work reported has evidently been undertaken to obtain improved understanding of reactor LOCAs although much of the material is relevant to other situations in the power and process industries.

Participation in the meeting was by invitation: sixteen of the papers are from Japan, the remainder from the USA. The editors express the hope in the preface that the book will be a worthy sequel to the "Proceedings of the Symposium on Two-phase Flow Dynamics" held at Eindhoven in 1967. International participation has been severely restricted in this case; nevertheless the breadth and depth of the work reported is impressive. A significant number of leading US research workers in the field participated: Bergles, Weisman, Jones, Lahey, Bankoff and Henry contribute papers on those topics for which they are internationally recognised. There are some useful review articles among the US presentations.

Most of the work reported by the US participants is readily available and known to engineers and research workers in this field. Perhaps the major value of this book lies in the Japanese papers which report work less well known, even to those who read Heat Transfer–Japanese Research and other Japanese sources.

Recent work on two-phase flow, not restricted to dynamic aspects, in Japanese universities and colleges is summarised in an introductory paper. One hundred and eighty projects are reported, excluding activities on boiling heat transfer, packed beds, bubble columns, and gas–liquid chemical reactions. Thirty-seven universities and colleges have projects in this area. About the only topic I do not see here is that of two-phase flow across tube banks. Even the work on condensation appears confined to flow through tubes. Work on crossflow and many other topics is carried out by Japanese research organisations, other than universities. This book would have been enhanced if there had been a similar article on work in Japanese national institutions, institutes of research and private companies; an authoritative overview of Japanese work in this area has still to be written. The article by Nakanishi on Recent Japanese Research on Two-phase Flow Instabilities does in fact cover the three main research sectors, universities, research institutes and private companies.

The Japanese papers cover, among other topics, vertical bubble flow, the entrainment mechanism, dynamic characteristic of stratified flow, pressure wave propagation in plug flow, shock phenomenon in bubble and slug flow, vapour explosions, flow statility, and PWR reflood.

There is much of merit in this book for anyone concerned with two-phase flow and heat transfer.

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