Int. J. Multiphase Flow Vol. 19, No. 5, pp. I–III, 1993
Pergamon Press Ltd. Printed in Great Britain

ANNOUNCEMENTS

A SHORT COURSE

on

AN INTRODUCTION TO APPLIED NONLINEAR DYNAMICS—BIFURCATIONS, FRACTALS AND CHAOS IN HEAT TRANSFER AND FLUID FLOW

Hosted by

Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

10–11 March 1994

The intention of this course is to give practising engineers a working knowledge of recent advances in nonlinear dynamics, including: static and dynamic bifurcations, fractals and chaos theory. While the theory of nonlinear dynamics is generic and has many practical applications, the examples to be given will stress heat transfer and fluid flow technology.

This course does not assume that the participants have any prior knowledge of nonlinear dynamics. It will be taught by Professors R. T. Lahey Jr (Rensselaer Polytechnic Institute) and J. J. Dorning (University of Virginia) who are specialists in the field.

For further information contact:

Professor G. Yadigaroglu
ETH-Zentrum/CLT
8092 Zurich
Switzerland
Tel. +41-1-632.4615
Fax: +41-1-262.2158

SHORT COURSES

on

MULTIPHASE FLOW AND HEAT TRANSFER: BASES, MODELING AND APPLICATIONS IN (A) THE NUCLEAR POWER INDUSTRY AND (B) THE PROCESS INDUSTRIES

Hosted by

Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

14–18 March 1994

These modular courses feature coordinated, comprehensive series of lectures by experts and are of interest to practising engineers and to researchers who wish to obtain a condensed and critical view of present basic knowledge, modeling and numerical techniques (Part I). Information on the state-of-the-art regarding applications in specialized industries is provided in Parts IIA and IIB.

The courses aim at an interdisciplinary transfer of knowledge. Applications cover nuclear and chemical plant safety (with an emphasis on severe accidents), advanced light water reactors, pipelines etc.

The lecturers

S. Banerjee, Professor at the Department of Chemical and Nuclear Engineering, University of California, Santa Barbara, U.S.A.

M. L. Corradini, Professor of Nuclear Engineering and Engineering Physics at the University of Wisconsin, Madison, U.S.A.

G. Hetsroni, Danciger Professor of Engineering at Technion—Israel Institute of Technology, Haifa, Israel.

G. F. Hewitt, Professor of Chemical Engineering at Imperial College, London, England.

R. T. Lahey Jr, Edward E. Hood Jr Professor of Engineering at Rensselaer Polytechnic Institute, Troy, NY and Director of the Center for Multiphase Research at RPI.

G. Yadigaroglu, Professor of Nuclear Engineering at the Swiss Federal Institute of Technology in Zurich (ETHZ) and Head of the Thermal-Hydraulics Laboratory at the Paul-Scherrer Institute, Switzerland.

Contents of lectures

Part I. Bases (3 days)

1. Introduction and basics
2. Basic equations
3. Flow regimes, pressure drop and void fraction
4. Phenomenological modeling: continuous flow
5. Phenomenological modeling: intermittent flow
6. Closure relationships
7. Two-phase heat transfer
8. Post-dryout heat transfer and rewetting
9. Numerical methods
10. The prediction of phase distribution and separation phenomena
11. Computer codes
12. Instabilities in two-phase flow

Part IIA. Water Reactor Applications ($1\frac{1}{2}$ days)

13A. LOCA phenomena
14A. Severe accidents
15A. Codes for transient and accident analysis
16A. Multiphase containment phenomena in advanced LWRs
17A. Steam generators
18A. Vapor explosions

Part IIB. Process and Petroleum Industry Applications ($1\frac{1}{2}$ days)

13B. Multicomponent evaporation and boiling
14B. Two-phase flow in pipelines
15B. Emergency relief system vent sizing
16B. Oil/water/gas flows: characteristics and measurement
17B. Dense gas and mist dispersions
18B. Vapor-cloud explosions

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