

# Preface

This book is a revision of the technology chapters of *Fusion Research* (Pergamon Press, 1982) by Dolan. The present book covers only magnetic confinement, not inertial confinement, with emphasis on the ITER project (originally called the International Thermonuclear Experimental Reactor), which is under construction in Cadarache, France by an international collaboration, including the People's Republic of China, the European Union, India, Japan, The Republic of Korea, the Russian Federation, and the United States. This book is intended to serve as a textbook for graduate students and advanced undergraduates, and also as a reference book for those working in one area of fusion research to learn about other areas. Each chapter has a summary, objectives, homework problems, references, and review questions. Since the fusion research field suffers from excessive use of abbreviations (EUA) the Appendices provide a List of Abbreviations, in addition to Units Conversions, Constants, Error Function, Vector Relations, Table of Symbols, and Answers to Problems. ITER is mentioned in almost every section, so it is cited sparingly in the Topic Index to avoid overcrowding that entry. Some information, such as thermal stress, appears in more than one place.

Fusion research has suffered from restrictive budgets worldwide, and from cancellation of many successful or planned projects in the USA (EBT-P, FMIT, MFTF-B, TFTR, SSPX, ALCATOR-CMOD, LDX, NCSX,...). It might cost the world  $\sim 5$  G\$ per year for 40 more years to develop fusion energy. This 200 G\$ over 40 years may sound like a large sum, but it is less than the US military spends in 4 months. Although fusion technology is curtailed economically, it is making steady progress towards the goal of safe, clean energy with abundant, inexpensive fuel.

To help improve the next edition please send me your comments on

Errors

Suggested additional paragraphs, figures, tables, and references

Suggested homework problems and solutions.

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*The views and opinions expressed herein do not necessarily reflect those of the ITER Organization.*

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