

Preface

This book documents the engineering behind most of today's aerospace propulsion systems. Some of the material coverage in this book for a number of relevant propulsion topics is more detailed, in the context of a university or technical college course textbook at the introductory or advanced level, so that the reader gets some appreciation of the mathematics (as well as the physics and history) involved in the science and engineering of propulsion. The wider coverage of topics in this book gives more context to the reader, and allows one to observe similarities and differences between systems, observations that otherwise would not be possible in a book dedicated to only one, or a few, propulsion systems. The book has been divided into two main parts, mostly based on the historical separation of the two well-established general categories: airplane propulsion and rocket propulsion. The roots of this book arise from several undergraduate and graduate aerospace engineering courses taught by the author at Ryerson University over the years, including *Aerospace Propulsion* and *Rocket Propulsion*, but also relevant elements of courses like *Flight Mechanics*, *Aircraft Performance* and *Gas Dynamics* that help bring additional background.

In addition to teaching, the author conducts research in the areas of solid and hybrid rocket propulsion, and the flight dynamics of vehicles. It is hoped that this research activity brings further background and insight in to this book. For example, in terms of historical context, the author can certainly understand the demands faced, and the need for persistence required, by researchers past and present, who struggle forward in the face of underfunding and lack of interest from the surrounding technical community.

Prior to joining Ryerson University in 1993, the author worked in the Canadian aerospace industry for a number of years, as well as a few years at a Canadian government laboratory. The author is presently an international member of the AIAA Solid Rockets Technical Committee, and over the years has been a frequent presenter of technical papers at various propulsion-related conferences in North America and Europe.

Powered Flight

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