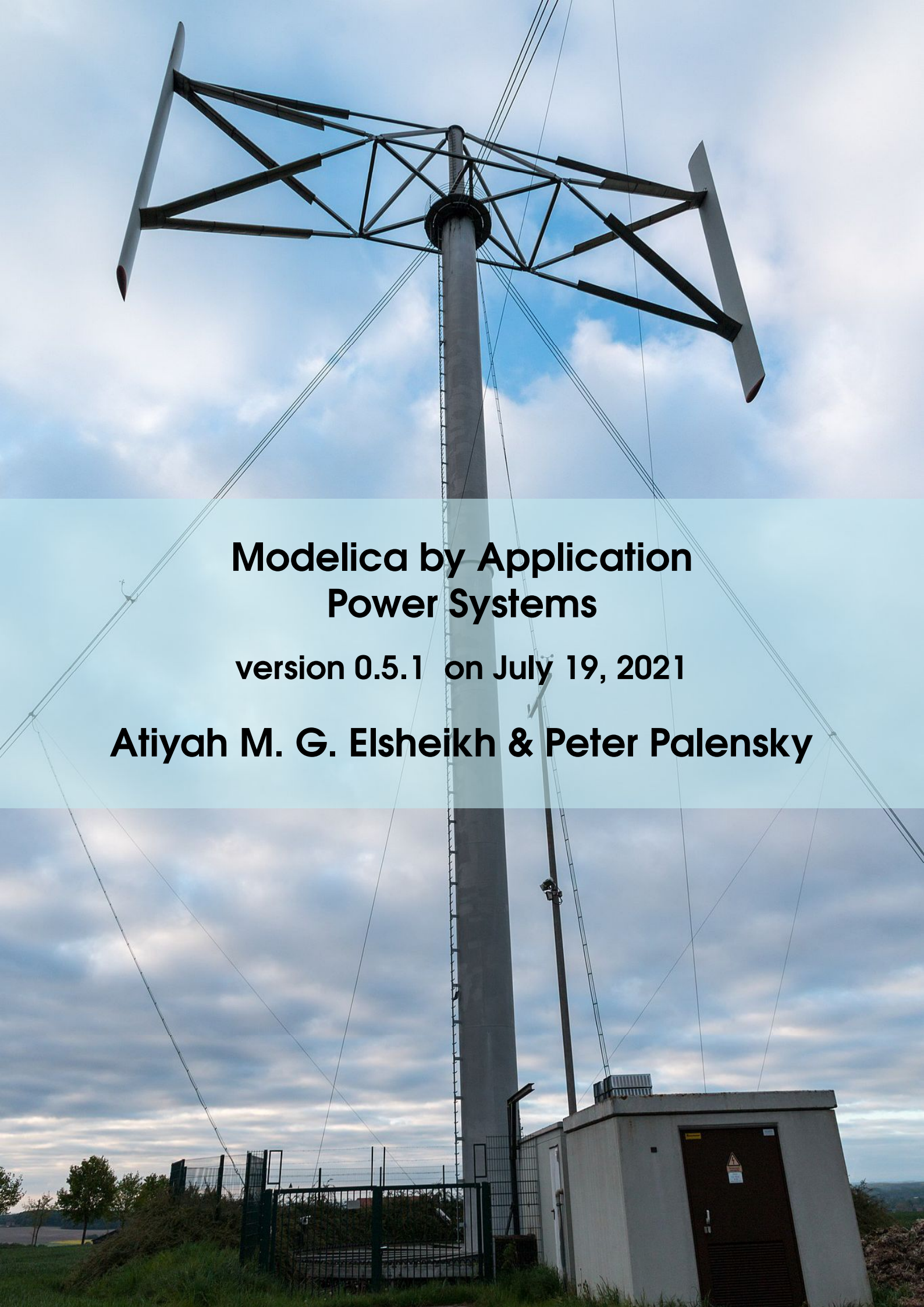

Modelica by Application
Power Systems

version 0.5.1 on July 19, 2021

Atiyah M. G. Elsheikh & Peter Palensky

Book Website:

https://github.com/Mathemodica/ModelicaPowerSystemBook

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About

This is a comprehensive but a concise and educational (e-)book aiming at advertising Modelica-based technologies particularly useful for power system modeling applications. We hope that this book is useful not only for power system modelers desiring to get a quick idea about the benefits of employing Modelica but also for those Modelica modelers desiring a starting guide into the world of Power System.

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Consider contacting atiyah.elsheikh -at- mathemodica.com if you would like to:

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About Mathemodica.com

By the time of relasing version 0.5 of the book (July 2021), Mathemodica.com is currently a virtual organization. It currently reflects the main hobby-based (but occoasionally professional) activites of the first author ususally on his free-time.

One of the idea behind Mathemodica.com, which is still evolving and subject to continuous improvement, is to provide a transparent, collaborative and independent platform for those who would like to sponsor their own ideas and works concerning Modelica-like technologies (libraries, tools, educational e-books, tutorials, etc.).

It is hoped that the resulting products to be open-source and free. If you'd like to become a part of this and contribute to the evolve of Mathemodica.com consider viewing:

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Sponsorship

Sponsorship (cf. to the quick urls given at the beginning of the book) is appreciated as an aid and accelerator for

- financing the continuation of maintaining, actualizing and progressing this book
- executing similar initiatives for establishing educational contents (tutorials, books and libraries)
- among other similar activities by members of Mathemodica.com, cf.
  http://mathemodica.com/projects

These activities are in conformance with the spirit of open science initiative.

Acknowledgment

We are acknowledging our former employer, Austrian Institute of Technology GmbH. This book has started initially as a technical report during our roles there. The early version was still in a primitive state until it was recently decided to re-write it as a comprehensive book.

Moreover, couple of capitals of this book has been written by others. Without their contribution, the book would be definitely less valuable. Thus, we'd like to thank (in alphabetical order of family names):

- Prof. Andrea Benigni, RWTH Aachen and Research Center Jülich, with his great help, this book was further tuned for Electrical Engineers. Particularly, major parts of Chapter 2 and Section 10.1 were originally written by him.
- Assoc. Prof. Omar Faruque, Florida State University, for presenting this initiative at a PES general meeting
- Prof. Antonello Monti, RWTH Aachen, being the initiator of the idea of having a comprehensive report that gathers all useful aspects Modelica can provide for power system modeling applications. The first chapter was originally written by him.

We believe that online Modelica educational materials need to be gathered together and since the idea of having a freely accessible book that is meanwhile sponsored (or to be sponsored) by any one on the basis of pay-as-much-as-you-think-this-book-deserve is inspired by the author of the book "Modelica by Examples", thus, special appreciation goes to Dr. Michael Tiller, for:

- his initial agreement in hosting or linking a possible future html-based version of this book to the platform
  `https://modelica.university`
- his technical tips, recommendations and his willing to help us (despite apparently being a very busy person with his own duties)

We hope to have enough energy in near future to learn the technology needed to bring this book to the platform modelica.university and to establish url-links to adequate materials in his book whenever more in-depth clarification of Modelica syntax is needed. In that way, the focus of this book can remain on the applications side of power systems rather than attempting to illustrate the tiniest details of the Modelica language[1]

We also would like to thank

[1] By the release version 0.5, I still did not invest enough time in this issue. Moreover, I am not so sure about a good way to convert and synchrnoize latex code to html. If anyone with proper technical knowledge would like to get engaged he/she is thankfully encouraged to contact us

- Dr. Mathias Legrand for allowing to employ this wonderful latex template accessible under
  https://www.latextemplates.com/template/the-legrand-orange-book

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