



**The Hong Kong University of Science and Technology**

**Department of Mathematics**

**Departmental Colloquium**

**Solution, optimization and design methods for periodic  
and non-periodic electromagnetic  
metamaterial structures**

by

***Prof. Oscar P. Bruno***  
***Caltech***

**Abstract**

This talk presents a variety of methodologies developed recently for the solution of Maxwell's equations, with application to the analysis, optimization, and design of periodic and non-periodic metamaterial structures. In particular, novel integral-equation solvers will be discussed which can rapidly produce accurate solutions to Maxwell's equations for general two- and three-dimensional structures. Associated optimization methods will be demonstrated. The Windowed Green Function method (WGF) and its powerful capabilities as a scattering isolator, with applications to multi-layered media, waveguiding problems, and periodic problems, will be presented. The difficulties arising from the existence of Wood anomalies in the context of periodic structures, which have previously hindered treatment of bi-periodic problems in three-dimensional space, will also be mentioned and addressed. The newest fast, three-dimensional Wood-anomaly-capable solvers will be described, and they will be demonstrated with a variety of numerical results.

***Date:*** ***Wednesday, 6 June 2018***  
***Time:*** ***3:00p.m. - 4:00p.m.***  
***Venue:*** ***Room 5508, Academic Building***  
***(near Lifts 25&26), HKUST***

***All are welcome!***

# Colloquium Methods Of Optimization 112

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## **Colloquium Methods Of Optimization 112:**

*Colloquium on Methods of Optimization* N. N. Moiseev, 2014-01-15 *Advancing Research in Information and Communication Technology* Michael Goedicke, Erich Neuhold, Kai Rannenber, 2021-08-03 For 60 years the International Federation for Information Processing IFIP has been advancing research in Information and Communication Technology ICT This book looks into both past experiences and future perspectives using the core of IFIP's competence its Technical Committees TCs and Working Groups WGs Soon after IFIP was founded it established TCs and related WGs to foster the exchange and development of the scientific and technical aspects of information processing IFIP TCs are as diverse as the different aspects of information processing but they share the following aims To establish and maintain liaison with national and international organizations with allied interests and to foster cooperative action collaborative research and information exchange To identify subjects and priorities for research to stimulate theoretical work on fundamental issues and to foster fundamental research which will underpin future development To provide a forum for professionals with a view to promoting the study collection exchange and dissemination of ideas information and research findings and thereby to promote the state of the art To seek and use the most effective ways of disseminating information about IFIP's work including the organization of conferences workshops and symposia and the timely production of relevant publications To have special regard for the needs of developing countries and to seek practicable ways of working with them To encourage communication and to promote interaction between users practitioners and researchers To foster interdisciplinary work and in particular to collaborate with other Technical Committees and Working Groups The 17 contributions in this book describe the scientific technical and further work in TCs and WGs and in many cases also assess the future consequences of the work's results These contributions explore the developments of IFIP and the ICT profession now and over the next 60 years The contributions are arranged per TC and conclude with the chapter on the IFIP code of ethics and conduct **A Collection of Papers Presented at the Nuclear Utilities Planning Methods Symposium, Chattanooga, Tennessee, January 16-18, 1974**, 1974 **BLL Conference Index, 1964-1973** British Library. Lending Division, 1974 *27th European Symposium on Computer Aided Process Engineering*, 2017-09-21 27th European Symposium on Computer Aided Process Engineering Volume 40 contains the papers presented at the 27th European Society of Computer Aided Process Engineering ESCAPE event held in Barcelona October 1-5 2017 It is a valuable resource for chemical engineers chemical process engineers researchers in industry and academia students and consultants for chemical industries Presents findings and discussions from the 27th European Society of Computer Aided Process Engineering ESCAPE event **AIChE Symposium Series** American Institute of Chemical Engineers, 2000 [European Symposium on Computer Aided Process Engineering - 13](#) Andrzej Kraslawski, Ilkka Turunen, 2003-05-07 This book contains papers presented at the 13th European Symposium on Computer Aided Process Engineering ESCAPE 13 The ESCAPE symposia bring together scientists students and engineers

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## **Table of Contents Colloquium Methods Of Optimization 112**

1. Understanding the eBook Colloquium Methods Of Optimization 112
  - The Rise of Digital Reading Colloquium Methods Of Optimization 112
  - Advantages of eBooks Over Traditional Books
2. Identifying Colloquium Methods Of Optimization 112
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Colloquium Methods Of Optimization 112
  - User-Friendly Interface
4. Exploring eBook Recommendations from Colloquium Methods Of Optimization 112
  - Personalized Recommendations

- Colloquium Methods Of Optimization 112 User Reviews and Ratings
- Colloquium Methods Of Optimization 112 and Bestseller Lists
- 5. Accessing Colloquium Methods Of Optimization 112 Free and Paid eBooks
  - Colloquium Methods Of Optimization 112 Public Domain eBooks
  - Colloquium Methods Of Optimization 112 eBook Subscription Services
  - Colloquium Methods Of Optimization 112 Budget-Friendly Options
- 6. Navigating Colloquium Methods Of Optimization 112 eBook Formats
  - ePub, PDF, MOBI, and More
  - Colloquium Methods Of Optimization 112 Compatibility with Devices
  - Colloquium Methods Of Optimization 112 Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Colloquium Methods Of Optimization 112
  - Highlighting and Note-Taking Colloquium Methods Of Optimization 112
  - Interactive Elements Colloquium Methods Of Optimization 112
- 8. Staying Engaged with Colloquium Methods Of Optimization 112
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Colloquium Methods Of Optimization 112
- 9. Balancing eBooks and Physical Books Colloquium Methods Of Optimization 112
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Colloquium Methods Of Optimization 112
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Colloquium Methods Of Optimization 112
  - Setting Reading Goals Colloquium Methods Of Optimization 112
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Colloquium Methods Of Optimization 112
  - Fact-Checking eBook Content of Colloquium Methods Of Optimization 112

- Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development
  - Exploring Educational eBooks
- 14. Embracing eBook Trends
  - Integration of Multimedia Elements
  - Interactive and Gamified eBooks

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