



第26届中国控制会议论文集

Proceedings of the 26th Chinese Control Conference

第一册

Volume 1

主 编 程代展 吴 敏
副主编 樊晓平 胡德文 黄 一 贾英民 刘智敏
彭 辉 王 龙 张纪峰 郑大钟



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内容简介

本书共收入 874 篇论文。这些论文是经中国自动化学会控制理论专业委员会组织评审, 作为第 26 届中国控制会议发表的论文。论文内容包括系统理论与控制理论, 模式识别, 非线性系统及其控制, 控制设计方法, 复杂性与复杂系统理论, 遗传算法与演化计算, 分布参数系统, 运动控制, 混杂系统与 DEDS, 智能机器人, 大系统, 分布式控制系统, 随机系统, 信息处理系统, 稳定性与镇定, 故障诊断, 建模、辨识与信号处理, 通讯网络系统, 最优控制与优化, CIMS 与制造系统, 鲁棒控制与 H_∞ 控制, 交通系统, 自适应控制与学习控制, 生物与生态系统, 变结构控制, 社会经济系统, 神经网络, 工业系统, 模糊系统与模糊控制等领域的应用研究成果。

本书可供从事自动控制理论及其应用研究的高等院校教师和研究生、科研单位的研究人员以及工业部门的工程技术人员参考。

本书进入 IEEE 会议出版程序, 论文可从 IEEE Explore 下载。

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前 言

“中国控制会议”是由中国自动化学会控制理论专业委员会负责组织的学术会议，自1979年至今已举办了25届，现已成为有关控制理论与技术的国际性学术年会。该系列年会的目的是为海内外系统控制领域的专家、学者、研究生及控制系统的设计人员提供一个学术交流的机会，以推动控制科学的学科发展和控制技术中的应用。

第26届中国控制会议于2007年7月26日~31日在风景秀丽的张家界举行。会议由中南大学和湖南省自动化学会承办，协办单位包括：IEEE控制系统协会、日本仪器与控制工程师协会、韩国控制、自动化与系统工程学会、中国科学院数学与系统科学研究院系统科学研究所、国防科技大学、湖南大学、湖南工业大学和香港工程师学会控制自动化与仪表分部。

本着开拓创新与时俱进的精神，本届大会加强了组织协调，为扩大国际交流，设立了美国、日本、英国、澳大利亚、加拿大、韩国、新加坡、香港等八个国家和地区主席，得到海内外学者的热烈响应。中国控制会议正朝着国际化的目标稳步前进。

本届会议邀请6位知名学者做大会报告，分别是Brian D. O. Anderson (The Australian National University, Australia), Theodore E. Djaferis (The University of Massachusetts Amherst, USA), Kwon, Wook Hyun (Seoul National University, Korea), Tielong Shen (Sophia University, Japan), Andrew R. Teel (University of California, USA), 吴家睿 (University of Science and Technology of China, China)。

本次会议共收到投稿论文1572篇，创造了新的记录。经程序委员会评审，论文集共收录874篇论文。论文作者来自中国大陆、香港、台湾、日本、美国、韩国、澳大利亚、伊朗、瑞典、英国、加拿大、新加坡、喀麦隆、埃及、立陶宛、法国、匈牙利、印度、意大利、约旦、突尼斯、土耳其等20多个国家和地区。论文内容包括：系统理论与控制理论、非线性系统及其控制、复杂性与复杂系统理论、分布参数系统、混杂系统与DEDS、大系统、随机系统、稳定性与镇定、建模、辨识与信号处理、最优控制与优化、鲁棒控制与 H_∞ 控制、自适应控制与学习控制、变结构控制、神经网络、模糊系统与模糊控制、模式识别、控制设计方法、遗传算法与演化计算、运动控制、智能机器人、分布式控制系统、信息处理系统、故障诊断、通讯网络系统、CIMS与制造系统、交通系统、生物与生态系统、社会经济系统和工业系统等领域的研究成果。本论文集可供从事自动控制理论及其应用研究的高等院校教师和研究生、科研单位的研究人员以及工业部门的工程技术人员参考。

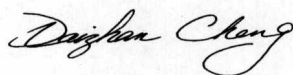
本届大会论文集将由ISTP(Index to Scientific and Technical Proceedings)收录，并进入IEEE Conference Publications Program (CPP) (IEEE 分类号：07EX1694)。

论文集的出版必将进一步促进系统科学的发展，推动先进控制理论与方法更好地为生产实践服务，促进控制技术产业化。

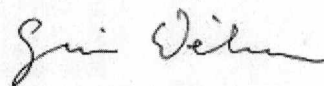
本届“关肇直奖”竞争激烈，申请论文达32篇。它的评选促使一批优秀的中青年控制科学工作者脱颖而出，为控制科学的发展注入新的血液。

我们诚挚感谢为中国控制会议的发展献策出力的海内外朋友们，为论文集的出版付出辛勤劳动和出色工作的各位论文作者，论文集主编、副主编，程序委员会专家和北京航空航天大学出版社的同志们。

第26届中国控制会议程序委员会主席



程代展



桂卫华

Preface

The Chinese Control Conference (CCC) is an annual technical conference sponsored and organized by the Technical Committee on Control Theory, Chinese Association of Automation. The first conference was held in 1979, and this is the 26th session. The purpose of CCC is to provide a forum for both practitioners and theorists in the area of systems and control to report their latest research results, to exchange their ideas and experience, and to promote collaborative research activities. The participants from China and from abroad, will gather together to discuss the development of systems and control theory and its applications to engineering problems.

The 26th CCC will be held in Zhangjiajie, a beautiful sightseeing spot in the western part of Hunan, China. The Central South University and Hunan Automation Association are the local sponsors. The conference is also co-sponsored by IEEE Control System Society, the Society of Instrument and Control Engineer (SICE) of Japan, the Institute of Control, Automation and System Engineers (KICASE) of Korea, the Institute of Systems Science, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, National Defense University of Science and Technology, Hunan University, Hunan University of Technology, CAI Div., Hong Kong Institution of Engineers.

In the spirit of reform, openness, and internationalization, the 26th CCC is devoted to strengthening its cooperation with control communities from all over the world by establishing 8 Regional Chairs for USA, Japan, United Kingdom, Australia, Canada, Korea, Singapore, and Hong Kong, respectively. CCC is now earning its reputation as a true international conference.

For the 26th CCC six prominent scholars over the world are invited to deliver the plenary speeches. They are Professor B. D. O. Anderson (The Australian National University, Australia), Professor T. E. Djaferis (The University of Massachusetts Amherst, USA), Professor W.H. Kwon (Seoul National University, Korea), Professor T. Shen (Sophia University, Japan), Professor A.R. Teel (University of California, USA), Professor J. Wu (University of Science and Technology of China, China).

This year, we have received a record high submission of 1572 papers. After a rigorous review process by the Conference Program Committee, 874 papers are accepted and included in the Conference Proceedings. The authors of the accepted papers are from various countries and regions including, in addition to the Chinese Mainland, Australia, Cameroon, Canada, Egypt, Estonia, France, Hong Kong, Hungary, India, Iran, Italy, Japan, Jordan, Korea, Singapore, Sweden, Taiwan, Tunisia, Turkey, United Kingdom, United States of America. The topics of the conference include System and Control Theory, Nonlinear System and Control, Complexity and Complex System Theory, Distributed Parameter Systems, Hybrid Systems and DEDS, Large Scale Systems, Stochastic Systems, Stability and Stabilization, Modeling, Identification and Signal Processing, Optimal Control and Optimization, Robust and H-infinity Control, Adaptive Control and Learning Control, Variable Structure Control, Neural Networks, Fuzzy System and Fuzzy Control, Pattern Recognition, Control Design, GA and Evolutionary Computing, Motion Control, Intelligent Robot, Distributed Control Systems, Information Processing Systems, Fault Diagnosis, Communication Network Systems, CIMS and Manufacturing Systems, Transportation Systems, Bio & Ecological Systems, Social Economy Systems, Industrial Systems, etc. The Conference Proceedings being a comprehensive collection of the latest research papers serve as an excellent reference for university professors and graduate students in the field of automation and control as well as for experts working in research institutions and engineers in industries.

The Conference Proceedings will be selected for coverage in ISI proceedings/ISTP (Index to Scientific and Technical Proceedings), and included in the IEEE Conference Publications Program (CPP) with IEEE Catalog Number 07EX1694.

This year, we have also received a large number (32) of papers for competing Guan Zhao-Zhi Best Paper Award. This is an indication that outstanding young researchers in the area of systems and control are mushrooming. They are rapidly moving up to the forefront of the systems and control community in China.

We would like to express our sincere thanks to our domestic and overseas friends for their constant support to CCC. We greatly appreciate all contributors of the papers and members of the program committee, the organizing committee, and the editorial board of the conference proceedings. Taking this opportunity, we would also like to thank the publisher, Beihang university Press.

Chairs of the Program Committee

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Plenary Speakers at the 26th Chinese Control Conference



Brian D. O. Anderson took his undergraduate degrees in Mathematics and Electrical Engineering at Sydney University, and his doctoral degree in Electrical Engineering at Stanford University.

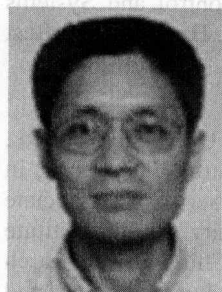
He worked in industry in the United States and at Stanford University before serving as Professor of Electrical Engineering at the University of Newcastle, Australia from 1967 through 1981. At that time, he took up a post as Professor and Head of the Department of Systems Engineering at the Australian National University in Canberra, where he was Director of the Research School of Information Sciences and Engineering from 1994 to 2002. For approximately one year to May 2003, he was the inaugural CEO of the newly formed National ICT Australia, established by the Australian Government through the Department of Communications, Information Technology and the Arts and

the Australian Research Council under the Information and Communication Technologies Centre of Excellence program. From May 2003 to September 2006, he served as Chief Scientist of NICTA. He has held many visiting appointments in the United States, Europe and Asia, including the University of California, Berkeley, Stanford University, Swiss Federal Institute of Technology and Tokyo Institute of Technology.

Professor Anderson has served as a member of a number of government bodies, including the Australian Science and Technology Council and the Prime Minister's Science, Engineering and Innovation Council. From its initial public listing until 2005, he was also a member for ten years of the Board of Cochlear Limited, the world's major supplier of cochlear implants. He is a Fellow of the Australian Academy of Science and Academy of Technological Sciences and Engineering, the Institute of Electrical and Electronic Engineers, and an Honorary Fellow of the Institution of Engineers, Australia. In 1989, he became a Fellow of the Royal Society, London, and in 2002 a Foreign Associate of the US National Academy of Engineering. He holds honorary doctorates of the Catholic University of Louvain in Belgium, the Swiss Federal Institute of Technology, and the Universities of Sydney, Melbourne, New South Wales and Newcastle. He was appointed an Officer of the Order of Australia in 1993.

He was President of the International Federation of Automatic Control for the triennium 1990 to 1993, and served as President of the Australian Academy of Science for four years from 1998 to 2002.

His research interests have included many contributions in the area of circuits, signal processing and control, and currently his work focuses on distributed control of multiagent systems, sensor network localization, adaptive and nonlinear control.



Wu Jiarui graduated in Dept. of Biology of Zhongshan University in Guangzhou in 1982, received a master degree from Institute of Genetics of Chinese Academy of Sciences in Beijing in 1985 and a doctor degree from Swiss Federal Institute of Technology in Zurich in 1994. He was a postdoctoral fellow in Health Science Center of State University of New York from 1994-1997. Since then, he become a professor in Shanghai Institute of Biochemistry in Chinese Academy of Sciences in Shanghai. Now he is a vice-president of Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences; the director of Department of Systems Biology, University of Science and Technology of China; and a vice-president of the Chinese Society of Biochemistry and Molecular Biology. Dr. Wu has been working on the area of the intracellular regulation network of cell proliferation, apoptosis and differentiation. Recently he put more efforts to promote the development

of Systems Biology in China. In addition, he was awarded as a chief scientist in a 973 project "Mechanism of Type 2 Diabetes Progression" in 2006. So far, he has published more than 40 research papers in international scientific journals, such as Science, Nature Genetics, EMBO J., and Mol. Cell. Biol. etc.



Wook Hyun Kwon received B.S. and M.S. degrees in electrical engineering from Seoul National University in 1966 and 1972, respectively, and a Ph D. degree from Brown University in 1975.

He was a research associate at Brown University (1975-1976), an adjunct assistant professor at the University of Iowa (1976-1977). He has been with Seoul National University since 1977, where he is currently a professor of School of Electrical Engineering and Computer Science. He was a visiting assistant professor at Stanford University (1981-1982)

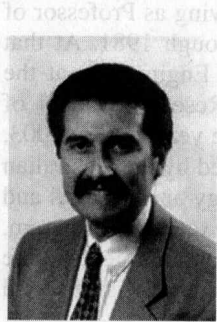
Dr. Kwon has published about 120 international journal papers and approximately 240 international conference papers, mostly in the areas of predictive controls, time-delayed system, FIR filtering, and real-time computer applications for automation. He authored a graduate text book, "Receding Horizon

Control: Model Predictive Control for State Models" appeared in July, 2005 by Springer.

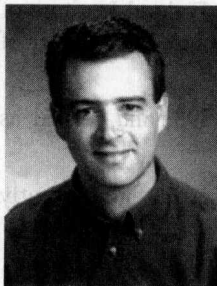
He received the National Academy of Sciences Award in 1997. He became a Fellow of the National Academy of Engineering of Korea (NAEK) in 1995 and a Fellow of the Korean Academy of Sciences and Technology (KAST) in 1996.

He became a Fellow of IEEE in 1999 and a Fellow of TWAS (The Academy of Sciences for the Developing World) in 2001. He received the Brown University Engineering Alumni Medal (BEAM) award for outstanding achievements in 2003.

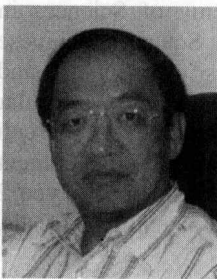
He was President of the Institute of Control, Automation and Systems Engineers (ICASE) of Korea in 1999, President of the Korean Institute of Electrical Engineers (KIEE) in 2001, and Vice-President of NAEK in 2002-2006. He was Chair of the Seoul National University Senate in 2005. He is now serving the International Federation of Automatic Control (IFAC) as President since July, 2005 and the Korean Academy of Sciences and Technology (KAST) as Vice-President since 2007.



Theodore E. Djaferis received the B.S. degree from the University of Massachusetts Amherst in 1974, and the M.S., E.E. and Ph.D. degrees from the Massachusetts Institute of Technology in 1977, 1978 and 1979 respectively. In 1979 he joined the Electrical and Computer Engineering Department of the University of Massachusetts at Amherst where he is currently a full professor and the Associate Dean of the College of Engineering. He is the author or co-author of more than one hundred technical publications in the area of systems and control and the author of the research monograph, *Robust Control Design: A Polynomial Approach*, published by Kluwer Academic Publishers in 1995. He is a co-editor of the research volume, *System Theory: Modeling Analysis and Control*, also published by Kluwer in 1999. He is also the author of a textbook for first-year engineering students with the title, *Automatic Control: The Power of Feedback*, published by PWS in 1998 (revised printing by Brooks/Cole in 1999). He is a three-time recipient of the Eta Kappa Nu Outstanding Professor Teaching Award in his Department, the recipient of a College of Engineering Outstanding Advisor Service Award in 1991 and the College Outstanding Teaching Award in 2001. He is a member of Eta Kappa Nu and Tau Beta Pi and a Fellow of the IEEE. He has been heavily involved in IEEE Control Systems Society professional activities and currently serves as President of the Society.



Andrew R. Teel received his A.B. degree in Engineering Sciences from Dartmouth College in Hanover, New Hampshire, in 1987, and his M.S. and Ph.D. degrees in Electrical Engineering from the University of California, Berkeley, in 1989 and 1992, respectively. After receiving his Ph.D., Dr. Teel was a postdoctoral fellow at the Ecole des Mines de Paris in Fontainebleau, France. In September of 1992 he joined the faculty of the Electrical Engineering Department at the University of Minnesota where he was an assistant professor until September of 1997. In 1997, Dr. Teel joined the faculty of the Electrical and Computer Engineering Department at the University of California, Santa Barbara, where he is currently a professor. Professor Teel has received NSF Research Initiation and CAREER Awards, the 1998 IEEE Leon K. Kirchmayer Prize Paper Award, the 1998 George S. Axelby Outstanding Paper Award, and was the recipient of the first SIAM Control and Systems Theory Prize in 1998. He was also the recipient of the 1999 Donald P. Eckman Award and the 2001 O. Hugo Schuck Best Paper Award, both given by the American Automatic Control Council. He is a Fellow of the IEEE.



Tielong Shen received the Ph.D. degree in Mechanical Engineering from Sophia University, Tokyo, Japan. From April 1992, he has been a faculty member of the Chair of Control Engineering in Department of Mechanical Engineering, Sophia University, where he currently serves as Associate Professor. Since 1996, he also served concurrently Professor of Yanshan University, Harbin Institute of Technology and "Luoja Xueze" Chair Professor of Wuhan University, China. His research interests include control theory and application in mechanical systems, power systems and automotive powertrain. In these area, he has authored/co-authored more 100 journal papers and 8 textbooks in Japanese, English and Chinese, respectively. From 1997, he has been serving as Chief Editor in Control Technique, Vice Chief Editor in Control Theory for the Transaction of SICE, Japan, and served as Guest Editor for International Journal on Robust and Nonlinear Control, during 2002-2003. Currently, he is Associate Editor for the IEEE Control System Society Conference Editorial Board, and is serving as Associate Editor of Journal of Control Theory and Applications, Guest Editor for Asian Journal of Control for special issue on New Trend in Automotive Powertrain Systems, and the Regional Editor Asia-Pacific for International Journal of Modeling, Identification and Control. He is now also serving as a member of the GB of Control Society of SICE, Chair of the Committee of SICE on Advanced Powertrain Control Theory, Member of Chinese Automation Society, and a member of the IEEE Technical Committee on Automotive Control.

“关肇直奖”条例

关肇直教授是中国科学院院士、国际知名的数学家和控制理论专家。他一生致力于数学、控制科学和系统科学的研究和发展，作出了重要的贡献。为了缅怀和纪念关肇直教授，推动我国控制科学的发展，特设立“关肇直奖”。奖励基金由国内外单位和个人捐赠，由关肇直奖基金委员会管理。

“关肇直奖”的授奖对象为中国自动化学会控制理论专业委员会举办的中国控制会议的投稿论文，论文第一作者年龄不超过四十周岁，所有作者都不是“关肇直奖”评奖委员会委员，论文所述工作未正式发表。“关肇直奖”每年评定一次，每次获奖名额不多于两篇，必要时可由评奖委员会决定是否增设“关肇直奖”提名奖，但名额也不超过两篇。凡申请“关肇直奖”的论文，需在投稿时注明，并附第一作者的工作证(或学生证、身份证)复印件。论文首先要通过会议审稿，然后由评奖委员会邀请有关专家作书面评审，确定入选论文。入选论文应由年龄不超过四十周岁的作者在中国控制会议上宣读，由评奖委员会根据论文质量及宣读水平，评出获奖论文，在会议闭幕式上宣布评选结果并授奖。

“关肇直奖”评奖委员会由“关肇直奖”基金委员会聘请国内外知名控制理论及应用专家组成，负责组织论文的评审与颁奖。当参加本次会议的委员不足全体委员的三分之二时，评奖委员会主任和专业委员会主任协商，聘请参加会议的知名专家增补为本次会议评奖委员。

“关肇直奖”基金委员会由中国自动化学会控制理论专业委员会领导，下设主任一至二人，副主任一至二人，委员若干人，负责基金的筹集和管理以及决定其他有关事项。

本条例的解释权和修改权属于“关肇直奖”基金委员会。

Awarding Rules for "Guan Zhao-Zhi Award"

Professor Guan Zhao-Zhi (Kwan Chao-Chih) was an academician of Chinese Academy of Sciences, a world wide famous mathematician and expert on control theory. He dedicated his whole life to the research and development of mathematics, systems and control science, and made significant contribution in these areas. To memorize and honor Professor Guan Zhao-Zhi and to enhance the development of control theory in China, the Guan Zhao-Zhi Award was established in 1994.

Papers satisfying the following conditions are qualified for applying the Guan Zhao-Zhi Award. 1) The paper is submitted to the annual Chinese Control Conference (CCC); 2) The first author of the paper is under 40 years old; 3) The results of the papers are original, not published elsewhere. Applying the Guan Zhao-Zhi Award should be properly claimed and a copy (e-version) of the ID Card of the first Author should be attached when the paper is submitted.

Papers applying for the Guan Zhao-Zhi Award should first pass the review process as regular submissions. Then the passed papers will go through a special re-review process. Based on the re-review evaluations EV decides the Final List of a small number of candidate papers. The candidate papers entering the Final List have to be presented at CCC by the first authors. According to the papers' qualities and their presentations, EV decides the Winner(s) of Guan Zhao-Zhi Award.

The Guan Zhao-Zhi Award is issued to no more than two papers at each CCC, and the winners are awarded at the closing ceremony of CCC. In case of necessity, EV may decide whether to add Guan Zhao-Zhi Nomination Award for at most two papers.

The Guan Zhao-Zhi Award is supported by the Guan Zhao-Zhi Fund, which is donated by organizations and individuals in and out of China. The Fund Committee, belonging to the Technical Committee on Control Theory (TCCT), Chinese Association of Automation (CAA), is responsible for fund raising, management, and other issues related to the Award.

The Evaluation Committee (EV) of Guan Zhao-Zhi Award is assigned by the Guan Zhao-Zhi Fund Committee, and is composed of well-recognized experts in systems and control. In case less than two thirds of EV members attend the CCC, some other experts may be invited by chair of EV to serve as EV members for the year.

The right of explanation and modification of this document belongs to the Guan Zhao-Zhi Fund Committee

历届“关肇直奖”获奖论文

第十二届获奖论文:

- 二阶偏微分方程能控能观性问题的统一处理, 付晓玉 (四川大学)(2006)
- Optimal AD-Conversion via Sampled-Data Receding Horizon Control Theory, Milan Derpich, Daniel E. Quevedo, Graham Goodwin (The University of Newcastle)(2006)

第十一届获奖论文:

空缺

第十届获奖论文:

- Practical output-feedback risk-sensitive control for stochastic nonlinear systems with stable zero-dynamics, Liu Yungang (Shandong University), Zhang Jifeng (AMSS, CAS) (2004)

第九届获奖论文:

- Inseparability of Min-Max Systems, Zhao Qianchuan (Tsinghua University)(2003)

第八届获奖论文:

- Dissipative Hamiltonian Realization and Energy-based L2-disturbance Attenuation Control of Power Systems, Wang Yuzhen, Ge You(Tsinghua University)(2002)

第七届获奖论文:

- Robust Control Problems Under Both Plant and Controller perturbations, Duan Zhisheng (Peking University)(2001)

第六届获奖论文:

- Observability Estimate: A Direct Method, Zhang Xu (Sichuan University)(2000)
- Linearization and Stabilization of Brockett Integrator, Sun Zhendong (Beijing University of Aeronautics and Astronautics)(2000 年)

第五届获奖论文:

- Task Scheduling and Synchronization in Robotic Manufacturing Systems, Song Mumin(Ford Motor Company), Xi Ning(Michigan State University)(1998)

第四届获奖论文:

- On Exact Controllability of Linear PDFs: Frequency Domain Characterization and Piecewise Multiplier Techniques, Liu Kangsheng (Zhejiang University)(1997)
- 齐次非线性系统 L_2 增益和 H_∞ 增益, 洪奕光、李洪谊 (中国科学院系统科学所)(1997)

第三届获奖论文:

- 航天器瞬变热流全系数自适应控制, 胡军、解永春 (北京控制工程研究所)(1996)
- 直接反馈线性化理论在平度热电厂的应用, 马幼捷、周雪松、迟正刚 (青岛大学)(1996)

第二届获奖论文:

- 具有线性和非线性不确定性的多变量系统的鲁棒稳定性, 田玉平、黄一 (东南大学)(1995)

第一届获奖论文:

- 多线性参数化区间系统的严格正实问题, 王龙 (北京大学)(1994)

第十二届“关肇直论文奖”获奖论文 (Awardees of the twelfth “Guan Zhaozhi” Award)

二阶偏微分方程能控能观性问题的统一处理

付晓玉 四川大学

论文摘要

这篇文章建立了二阶偏微分算子的一个带权恒等式。通过对参数赋予适当的值,推导出关于抛物方程、双曲方程、Schrodinger方程和板方程的所有已知的基于整体Carleman估计而得到的能控能观性结果;同时,作为它进一步的应用,给出了一个新的关于线性化的复Ginzburg-Landau方程的能控能观性结果。(摘自《第25届中国控制会议论文集》)

由于文章在偏微分方程能控能观性方面的贡献,关肇直评奖委员会决定授予该文第十二届“关肇直论文奖”。



获奖论文作者简介

付晓玉(Fu Xiaoyu): 四川大学数学学院2005级博士研究生。1979年生于山东枣庄。2002年毕业于山东师范大学数学系数学与应用数学专业,获理学学士学位。2005年毕业于四川大学数学学院运筹学与控制论专业,获理学硕士学位。2005年9月至今在四川大学数学学院攻读运筹学与控制论专业博士研究生。主要研究方向为分布参数系统的控制理论等。

OPTIMAL AD-CONVERSION VIA SAMPLED-DATA RECEDING HORIZON CONTROL THEORY

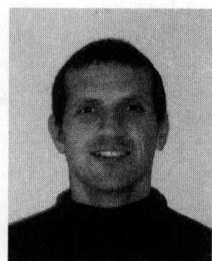
Milan S. Derpich, Daniel E. Quevedo and Graham C. Goodwin
School of Electrical Engineering and Computer Science, The University of Newcastle, Australia

Abstract

This paper presents novel results on the joint problem of sampling, reconstruction and quantization of analog signals. Existing literature on this topic deals exclusively with band-limited signals in sampled form. Our key departure from earlier results is that we deal with continuous time reconstruction of not necessarily band-limited signals. Our approach utilizes concepts and tools from optimal sampled-data and receding horizon control theory. The key conclusion from the work presented here is that, in the case under study, the optimal quantizer design problem can be partitioned into two sub-problems, namely (i) the design of an optimal analog pre-filter followed by sampling and (ii) an optimal quantizer, which works directly on the pre-sampled signals. Simulation results are presented which illustrate the performance of the optimal A-D converter designed via these principles. (摘自《第25届中国控制会议论文集》)

The paper is awarded for contributions to sampled-data receding horizon control.

CV of the First Author



Milan S. Derpich: Born in Chile in 1973. He graduated as Civil Electronic Engineer from Universidad Técnica Federico Santa María, Valparaíso, Chile, in 1999, and was awarded as 1999's highest score engineering graduate. Between 1999 and 2004 he worked by the electronics design and manufacturing company Protonic Chile S.A., consecutively occupying the positions of design engineer, technical manager (from 2000), and general manager (from 2001). In representation of Protonic Chile S. A. he was elected member of the board of directors of the Chilean Association of Electronics Industries (AIE) between 2003 and 2004. On 2004, Milan Derpich worked as lecturer for Electrical and Electronic Engineering at INACAP, a technical education center in Chile. In February 2005 he begun his PhD candidature in Electrical Engineering at The University of Newcastle, Australia, under the supervision of Professor Graham C. Goodwin. His current scientific interests include digital signal processing,

automatic control, audio engineering and physics. More information and recent publications can be found at <http://msderpich.no-ip.org>.

中国控制会议张贴论文奖条例

随着中国控制会议的规模日益增大, 张贴论文成为会议的重要学术交流方式之一。为了使张贴论文更加活跃和丰富, 特设立“中国控制会议张贴论文奖”, 奖金由中国自动化学会控制理论专业委员会提供。“中国控制会议张贴论文奖”的授奖对象为当年已接受并在中国控制会议上张贴的论文, 论文所述工作未正式发表。“中国控制会议张贴论文奖”评奖委员会由中国自动化学会控制理论专业委员会聘请国内外专家组成, 根据论文的水平 and 版面表述形式等综合因素进行评审与颁奖。授奖名额为每届中国控制会议不多于两篇。

本条例的解释权和修改权属于中国自动化学会控制理论专业委员会。

Awarding Rules for Chinese Control Conference Poster Award

Accompanying the flourish of the Chinese Control Conference (CCC), the poster presentation becomes one of the important ways for academic exchange. To encourage the poster presentation at CCC, the “Chinese Control Conference Poster Award” is created starting from the 25th CCC.

The fund of the Award is provided by the Technical Committee on Control Theory (TCCT), Chinese Association of Automation. The candidates of the CCC Poster Award are all authors of the poster papers that have been accepted and poster-presented at the current CCC and with contents not been published elsewhere before.

The Evaluation Committee of the CCC Poster Award is organized by TCCT via inviting outstanding scholars. The evaluating criteria consist of academic level and quality of exhibition. No more than two poster papers are awarded annually.

The TCCT holds the authority to explain the rules of this Award.

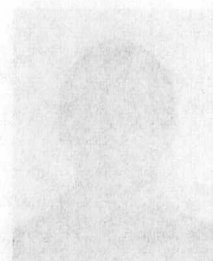
Abstract

This paper presents novel results on the joint problem of sampling, reconstruction and quantization of analog signals. Existing literature on this topic deals exclusively with band-limited signals in sampled form. Our key departure from earlier results is that we deal with continuous time reconstruction of not necessarily band-limited signals. Our approach utilizes concepts and tools from optimal sampled-data and receding horizon control theory. The key conclusion from the work presented here is that, in the case under study, the optimal quantizer design problem can be partitioned into two sub-problems, namely (i) the design of an optimal analog pre-filter followed by sampling and (ii) an optimal quantizer, which works directly on the pre-sampled signals. Simulation results are presented which illustrate the performance of the optimal A-D converter designed via these principles. (摘自《第25届中国控制会议论文集》)

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Milán S. Derpich Born in Chile in 1973. He graduated as Civil Electronic Engineer from Universidad Técnica Federico Santa María, Valparaíso, Chile, in 1999, and was awarded as 1999's highest score engineering graduate. Between 1999 and 2004 he worked by the electronics design and manufacturing company Protomic Chile S.A., consecutively occupying the positions of design engineer, technical manager (from 2000), and general manager (from 2001). In representation of Protomic Chile S.A. he was elected member of the board of directors of the Chilean Association of Electronics Industries (AIE) between 2003 and 2004. On 2004, Milán Derpich worked as lecturer for Electrical and Electronic Engineering at INACAP, a technical education center in Chile. In February 2005 he began his PhD candidature in Electrical Engineering at The University of Newcastle, Australia, under the supervision of Professor Graham C. Goodwin. His current scientific interests include digital signal processing, automatic control, audio engineering and physics. More information and recent publications can be found at <http://msderpich.no-ip.org>.



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