
Organização do International Colloquium on Stability and Ductility of Steel Structures (SDSS' Rio 2010)

Local do evento: Hotel Novo Mundo

Endereço completo: Praia do Flamengo, 20

Município: Rio de Janeiro

Comissão Organizadora Local:

1. Pedro Colmar Gonçalves da Silva Vellasco - UERJ
2. Eduardo de Miranda Batista - UFRJ
3. Luciano Rodrigues Ornelas de Lima - UERJ
4. Michèle Schubert Pfeil - UFRJ
5. Sebastião Arthur Lopes de Andrade - UERJ
6. José Guilherme Santos da Silva - UERJ
7. Ronaldo Carvalho Battista - UFRJ
8. Alexandre Landesmann - UFRJ

Apresentação do Evento

O SDSS'Rio 2010, *Stability and Ductility of Steel Structures* é parte de uma série de congressos internacionais dedicados à discussão de pesquisas e aplicações na área de engenharia estrutural voltadas para a utilização de estruturas de aço e estruturas mistas aço-concreto. Essa série foi iniciada em 1972 em Paris, inicialmente denominada *International Colloquia*, tendo se repetido a cada 4 anos, com sede em várias cidades. Os dois últimos eventos ocorreram em Budapeste em 2002 e em Lisboa em 2006, organizados pela Budapest University of Technology and Economics e Academia de Ciências Húngara, e pelo Instituto Superior Técnico de Lisboa, respectivamente. Atualmente, essa série regular de congressos é denominada *Stability and Ductility of Steel Structures*, SDSS.

Os congressos SDSS são coordenados pelo *Structural Stability Research Council* - SSRC, sediado nos Estados Unidos, organização essa que se dedica ao estudo e debate de problemas relacionados com a estabilidade das estruturas metálicas em geral, com o objetivo final de promover a modernização das normas técnicas e documentação referente à engenharia estrutural. O SSRC é uma organização internacional, no sentido que admite em seu quadro de membros, professores, pesquisadores e engenheiros de todas as origens, desde que estejam dedicados a comparecer e participar ativamente das reuniões anuais promovidas na América do Norte, as *SSRC Annual Technical Session*. A escolha do Rio de Janeiro para sediar o SDSS'Rio 2010 foi anunciada pelo *chairman* do SSRC, professor R. Zienmian, ao final da conferência anterior, em 2006 em Lisboa, sendo organizado conjuntamente pela COPPE/UFRJ e a UERJ.

O Evento SDSS 2010



O SDSS'Rio 2010, *Stability and Ductility of Steel Structures* ocorreu de 8 a 10 de setembro de 2010, no centro de convenções do Hotel Novo Mundo e contou com o apoio institucional das duas universidades, co-organizadoras UFRJ e UERJ. Nestes três dias foram apresentados 133 trabalhos regulares e 8 conferências dos *key note speakers* convidados. O evento contou com a participação de 155 participantes sendo 115 Profissionais e 40 Estudantes de Graduação, Mestrado e Doutorado.

O SDSS foi organizado de forma que todos os participantes pudessem assistir as conferências convidadas que foram proferidas no salão ouro do Hotel Novo Mundo. Os trabalhos regulares foram apresentados em duas sessões paralelas que ocorreram nos salões ouro e bronze do centro de convenções do referido hotel. O programa completo do evento com a distribuição das apresentações dos trabalhos por seção e dia se encontra no Anexo I.A distribuição de trabalhos por países participantes se encontra abaixo:



IV - As Conferências dos Key Note Speakers Convidados



A Primeira Conferência foi proferida Pelo Prof. Ian W. Burgess do University of Sheffield, United Kingdom no dia 8 de setembro as 9:00 horas no salão Ouro sendo intitulada: The Effect of Edge Support on the Tensile Membrane Action of Composite Slabs in Fire

O resumo da conferência foi: The increasing use of performance-based approaches in structural fire engineering design of multi-storey composite buildings has prompted the development of various tools to assess the effect of tensile membrane action in enhancing the load-carrying capacity of composite

slabs at elevated temperatures. A method which has been widely used in the past decade is the Bailey-BRE membrane action method, which has prompted further developments in New Zealand and the United Kingdom. This method predicts slab capacities in fire by modelling in a simplified fashion the deflection of rectangular slab panels supported on edges which resist vertical deflection. In the UK the software TSLAB was later developed, which optimises reinforcement size to generate an enhanced capacity of the slab at large deflections, capable of bearing the fire limit state load at the required fire resistance time, expressed in terms of an allowable-deflection limit. The method assumes that the task of providing the necessary vertical edge support in practice requires a panel's perimeter beams to be protected, and that they do not deflect, only allowing for compartmentation integrity failure by fracture of reinforcement or corner concrete crushing. However, these protected edge beams deflect under the influences of load and increasing temperature, and this may cause catastrophic structural failure of the slab panel before the required fire resistance time is achieved. It is therefore imperative to determine the real contribution of slab reinforcement areas to the tensile membrane action, considering properly the progressive loss of vertical edge support. This paper presents an investigation of the influence of vertical support along slab panel boundaries on the slab behaviour in fire. It examines the development of the membrane action mechanism for various degrees of edge-beam protection, makes comparisons with predictions by the current Bailey-BRE Method and TSLAB, to determine the influence of protected edge beams and reinforcement area on failure of slab panels at elevated temperatures.



A Segunda Conferência foi proferida Pelo Prof. Reidar Bjorhovde do The Bjorhovde Group no dia 8 de setembro as 9:30 horas no salão Ouro sendo intitulada: Some Issues for column stability criteria

O resumo da conferência foi: A perennial topic of great interest to researchers, code writers and designers alike, extensive column stability research work has been conducted for more than 250 years. Following the initial elastic solutions, numerous studies have examined the influence of material and member imperfections, and practical criteria have evolved that recognize all major

strength parameters. However, the definitive solutions were only obtained in the 1970-s, when modeling and numerical solutions allowed for the incorporation of all nonlinear effects. Since that time, reliability and probabilistic solutions have provided state-of-the-art criteria for limit state treatment of the column problem. These principles are now the bases of the design standards for columns in all countries. The paper focuses on the major evolutions that have taken place, but especially the work over the past 40 years.



A Terceira Conferência foi proferida Pelo Prof. **Dinar Camotim** do Department of Civil Engineering and Architecture, ICIST/IST, Technical University of Lisbon, Portugal no dia 8 de setembro as 16:00 horas no salão Ouro sendo intitulada: Latest Developments in the GBT Analysis of Thin-Walled Steel Structures

O resumo da conferência foi: The extensive application of thin-walled structures in the construction industry, namely those built from steel profiles, is mainly due to their high structural efficiency (large strength-to-weight ratio), remarkable fabrication versatility and very easy/speedy erection. However, these structural systems are often formed by individual or connected members (columns, beams or beam-columns) with rather slender cross-sections, which invariably exhibit a strong susceptibility to local, distortional and global deformations, a feature that makes the rigorous assessment of their structural response a quite difficult task. Moreover, such structural systems are also highly prone to rather complex buckling and vibration phenomena that must be adequately reflected in their design rules and recommendations. This goal can only be adequately achieved if one is able to obtain in-depth information about the buckling, post-buckling and vibration behaviour of these structural systems. Indeed, only reliable and physically based models can lead to the development of rational, fully efficient and easy-to-use formulae and/or design procedures.

Generalised Beam Theory (GBT) (i) extends Vlasov's classical thin-walled beam theory to incorporate cross-section deformations (wall bending and distortion) and (ii) was originally developed by Schardt (1989, 1994), making it possible to perform first-order and buckling analyses of isotropic, linear elastic thin-walled members with unbranched open and single-cell closed cross-sections. Subsequently, Davies *et al.* (e.g., 1994, 1996, 1998) (i) employed this theory extensively to study the local and global buckling behaviour of cold-formed steel profiles and (ii) showed that, in this context, GBT constitutes a rather powerful, elegant and clarifying method of analysis, mostly due to its unique features: by taking into account both cross-section and member deformations, and decomposing the member deformed configurations or buckling/vibration modes into linear combinations of "pure deformation modes", it offers possibilities not currently available even through the use of powerful numerical techniques, such as the finite element or finite strip methods. In the last few years, a research team at IST (Technical University of Lisbon) has devoted a very significant amount of work to the development and numerical implementation of novel GBT formulations, which considerably modify and/or extend Schardt's original theory, thus enabling the performance of several additional analyses in a wide range of structural systems (Camotim *et al.* 2004, 2006, 2008). In particular, it is now possible to perform (i) first-order, buckling, post-buckling, vibration and dynamic analyses of metal and FRP members with open and closed cross-sections, and (ii) first-order, buckling and post-buckling analyses of steel frames built from thin-walled open-section members profiles (e.g., cold-formed steel profiles). The aim of this lecture is to report and provide a unified view on the most recent advances carried out at the Technical University of Lisbon concerning the use of GBT analyses to assess the structural response of thin-walled steel members and frames. Besides presenting a brief but insightful overview of the fundamental concepts and main procedures involved in the performance of a GBT analysis, it (i) provides a detailed account, as well as illustrates the application and capabilities, of several GBT formulations that were developed and numerically implemented (beam finite elements) in the last couple of years, and also (ii) addresses and comments the research work dealing with GBT developments that is currently under way. In particular, the findings reported concern GBT formulations to analyse (i) the buckling and post-buckling behaviour of (i1) open-section members and frames exhibiting arbitrary loadings and support conditions (including stress gradients and localised constraints) and (i2) members with arbitrary cross-section shapes under uniform loadings, and (ii) the vibration behaviour of open (mostly) and closed-section members with arbitrary support conditions - the vibration analyses include loaded members. For validation and efficiency assessment purposes, most of the GBT-based numerical results presented are compared with values yielded by shell finite element analyses carried out in commercial codes (e.g., Abaqus or Ansys).



A Quarta Conferência foi proferida Pelo Prof. Jeffrey A. Packer do Department of Civil Engineering, University of Toronto no dia 9 de setembro as 9:30 horas no salão Ouro sendo intitulada: Manufacturing Specifications for Hollow Steel Sections in 2010.

O resumo da conferência foi: The minimum mechanical and geometric property requirements, stipulated in contemporary manufacturing specifications for cold-formed and hot-finished structural hollow sections internationally, are reviewed and compared. Many of the key criteria are shown to have implications for the structural performance under static, impact and seismic loading conditions, as well as under hot-dip galvanizing. Considerable effort is currently being expended by an industry task force in North America to produce a new manufacturing standard for “high performance” cold-formed, hollow structural sections, to address the current limitations of the product. Features of this resulting draft standard are presented.



A Quinta Conferência foi proferida Pelo Prof. Lui Simões da Silva do ISISE, Departamento de Engenharia Civil, Faculdade Ciências e Tecnologia, Universidade de Coimbra, Portugal no dia 9 de setembro as 10:30 horas no salão Ouro sendo intitulada: Stability design of steel Structures by FEM.

O resumo da conferência foi: The design of steel structures by FEM allows a more accurate representation of the physical phenomena that dictate the ultimate limit states of a structure. However, the added accuracy in the estimation of the behaviour of a steel structure or component comes at the price of increased complexity. In general, the use of FEM already requires careful consideration of the following aspects: (i) modelling of the structure or structural component and their respective boundary conditions; (ii) choice of software and its respective documentation; (iii) modelling of the materials' properties; (iv) use of imperfections; (v) modelling of loads; (vi) specification of the criteria for limit states; (vii) selection of partial coefficients to adopt. Because steel structures are usually slender, stability phenomena are very often present, usually combined with plasticity. Design by FEM is therefore required to incorporate geometrical and material nonlinear analysis. In addition, realistic patterns and levels of imperfections must also be considered. Stability phenomena may induce global or local unstable behaviours that may result in numerical problems such as non-convergent solutions beyond a given load increment. This paper discusses several approaches to deal with these problems and presents a hierarchy of methods that increasingly improve accuracy at the expense of complexity and time. Illustrative examples are presented that show the level of accuracy that can be achieved with each method. Finally, these methods are put in the context of the Eurocodes.



A Sexta Conferência foi proferida Pelo Prof. Gregory J Hancock da University of Sydney no dia 9 de setembro as 16:00 horas no salão Ouro sendo intitulada: Direct Strength Design of Cold-Formed Sections for Shear & Combined Actions O resumo da conferência foi: The Direct Strength Method of Design (DSM) of Cold-Formed Steel Structural Members has recently been introduced into the North American Specification (ANSI S100) (2007) and the Australian/New Zealand Standard (AS/NZS 4600:2005) as an alternative design method to the effective width method (EWM). One of the major advantages of the DSM, other than simplicity, is its ability to allow more complex and innovative shapes in cold-formed design. The current specifications are limited by the fact that the rules apply only to pure bending and pure compression. In order to extend the DSM to shear, and combined bending and shear, a research program has been performed recently at the University of Sydney. This includes evaluation and calibration of DSM design rules for shear and combined actions when applied to an extensive series of purlins tested at the University of Sydney, as well as shear only and combined bending and shear tests on channel sections. The paper will summarise this research, as well as make proposals for shear, and combined actions. Two features being researched are the effect of full section shear buckling (as opposed to web only shear buckling), and tension field action. Full section buckling is a feature of the DSM not included in the EWM but requires software that can evaluate full sections for shear. Methods for doing this will be summarised in the paper.



A Sétima Conferência foi proferida Pelo Prof. Dan Dubina da The "Politehnica" University of Timisoara, Romania No dia 10 de setembro as 9:30 horas no salão Ouro intitulada: Dual-Steel Frames for Multistory Buildings in Seismic Areas O resumo da conferência foi: Seismic resistant building frames designed as dissipative structures must allow for plastic deformations to develop in specific members, whose behaviour has to be predicted by proper design. Members designed to remain elastic during earthquake, such as columns, are responsible for robustness of the structure and prevention the collapse, being characterized

by high strength demands. Consequently a framing solution obtained by combining HSS and MCS, is natural. The robustness of structures to severe seismic action is ensured by their global performance, in terms of ductility, stiffness and strength, i.e. the "plastic" members of MCS – (S235 to S355) will dissipate the seismic energy, acting like "structural fuses", while the "elastic" members (HSS - S460 to S690) provided with adequate overstrength, by higher resistance of material and appropriate size of sections, will have the capacity to carry the supplementary stresses, following the redistribution of forces, after appearance of plastic hinges. Such a structure is termed dual-steel structure. When braced frames of removable MCS dissipative members are used, such as the links in EBF , Buckling Restrained Braces in CBF or Shear Walls in MRF systems , the elastic HSS part of the structure has a beneficial restoring effect after earthquake enabling to replace the fuses .Dual-steel approach can be considered for beam-to column connections, too, on the same philosophy related to ductile and brittle components, in order to achieve both ductility and robustness criteria. The paper summarizes the results obtained on this subject in the Department of Steel Structures and Structural Mechanics at the "Politehnica" University of Timisoara.



A Oitava Conferência foi proferida Pelo Prof. Laszlo Dunai do Department of Structural Engineering, Budapest University of Technology, Hungria no dia 10 de setembro as 10:30 horas no salão Ouro intitulada: Advanced stability analysis of regular stiffened plates & complex plated elements

O resumo da conferência foi: Design methodology based on advanced finite element analysis deserves special attention in the new Eurocodes dealing with buckling analysis of plated structures. The code provides a solid base in design of special structures with giving the general alternative of using different level

of numerical analyses or simulations instead of standardized formulae. In the first phase of the research regular multi-stiffened panels are studied by laboratory tests and the buckling resistances are calculated and evaluated by three different ways: (i) conventional Eurocode method for the separate orthotropic plates on the basis of the interaction of the plate and stiffener buckling, (ii) buckling analyses of the plate elements under the actual stress conditions, without separating the cross-section components; the stability resistance is derived on the bases of the critical load factor using the standardized method and (iii) material and geometrical nonlinear analyses using equivalent geometrical imperfections, the design resistances are derived by the FEM based design method. In the second phase the study is extended for the stability analyses of complex plated elements, related to the design of a new Danube arch bridge. The non-conventional constructional solutions and complex loading conditions are studied by refined multi-level finite element models. The relative safeties of the different methods of the critical plated elements are determined. The paper highlights the practical problems of the advanced stability analysis: definition of critical point of the element, handling stress concentrations and definition of imperfections.

V - Os Anais do SDSS 2010

As contribuições dos participantes foram reunidos em anais compostos por dois volumes editados pelas Universidades Co-Organizadoras UFRJ e UERJ recebendo um ISBN 978-85-285-0137-7. Estes dois volumes, com um total de 1206 páginas, foram distribuídos aos participantes que também tiveram a opção de buscar os artigos online em : <http://www.coc.ufrj.br/sdss2010/proceedings.asp>. A cópia da capa e o índice do conteúdo dos anais encontra-se no Anexo II deste documento

VI - Considerações Finais

As apresentações dos trabalhos na conferência propriamente dita possibilitaram a atualização e debates de profissionais nas linhas de pesquisa cobertas pelo SDSS 2010. Esta interação possibilitou que pesquisadores do Brasil e exterior efetassem um intercâmbio de informações e a identificação de possíveis áreas de desenvolvimento conjunto de pesquisa. De forma específica o SDSS 2010 serviu para consolidar o desenvolvimento destas linhas de pesquisa inovadoras e possibilitou um progresso significativo da área de estruturas. A partir desta experiência, novos sistemas construtivos e procedimentos de projeto poderão ser desenvolvidos nas áreas de estruturas o que possibilitará um melhor aproveitamento dos materiais, e uma consequente redução nos custos finais de construção. A economia gerada certamente servirá de incentivo para que as Indústrias de Construção Civil do Estado do Rio de Janeiro passem cada vez mais a utilizar estes sistemas construtivos impulsionando a economia do estado e do Brasil de uma forma geral. Sem mais para o momento, coloco-me a vossa inteira disposição para qualquer outro esclarecimento que se faça necessário.

Prof. Pedro Colmar Gonçalves da Silva Vellasco.

Departamento de Estruturas e Fundações,

UERJ

ANEXO I

**Programa Final do International Colloquium on Stability and Ductility of Steel Structures,
SDSS' Rio 2010, 8 a 10 de setembro de 2010,
Centro de Convenções do Hotel Novo Mundo,
Rio de Janeiro, RJ, Brasil.
Organização: UFRJ e UERJ.**

Conference Programme

Scientific Committee

S.A.L. Andrade - Brazil	J.R. Liew - Singapore
R. Azoube - Brazil	L.R.O. Lima - Brazil
E.M. Batista - Brazil	J. Lindner - Germany
R. Batista - Brazil	M. Marenholz - Australia
E. Bayo - Spain	R. Maugoi - Belgium
D. Beg - Slovenia	F. Mazzolini - Italy
F. Billaard - Netherlands	E. Mirambet - Spain
R. Biondovile - USA	J.R. Muzeau - France
M.A. Bradford - Australia	D.A. Nethercot - UK
I. Burgess - UK	L.C. Neves - Portugal
D. Camolim - Portugal	J. Pachier - Canada
P.J.S. Cruz - Portugal	G. Panie - UK
J.B. Dawson - UK	M. Pfel - Brazil
R. Driver - Canada	R. Plank - UK
D. Dubina - Romania	A. Plumier - Belgium
L. Dunai - Hungary	K.J. Rasmussen - Australia
W.S. Easeling - USA	P.V. Reai - Portugal
R.H. Fakury - Brazil	J.P.C. Rodrigues - Portugal
J.M. Franssen - Belgium	B. Schaefer - USA
T. Galambos - USA	J.G.S. Silva - Brazil
P.B. Gonçalves - Brazil	L.S. Silva - Portugal
R. Greiner - Austria	N. Silvestre - Portugal
G. Hancock - Australia	M. Skaloud - Czech Rep.
J.-P. Janssart - Belgium	H. Snijder - Netherlands
V. Kodur - USA	R. Souza - Brazil
U. Kuhlmann - Germany	B. Uy - Australia
R. LaBoube - USA	P.C.G.S. Velasco - Brazil
D. Lam - UK	A. Wadee - UK
A. Landesmann - Brazil	F. Wald - Czech Rep.
R. Landolfi - Italy	B. Young - Hong Kong
	R. Zieman - USA



International Conference
Stability and Ductility of Steel Structures
8 to 10 September 2010
Rio de Janeiro, Brazil

Organization

UFRJ/COPPE - Federal University of Rio de Janeiro	Eduardo de M. Batista
UERJ - State University of Rio de Janeiro	Pedro C. G. da S. Velasco
SSRC - Structural Stability Research Council	Luciano R. O. de Lima
	Editors

Organizing Committee

Alexandre Landesmann - UFRJ	Maximiliano Matthe - USP / SC
Arlene Maria Carmanh Freitas - UFOP	Michèle Schubert Pfel - UFRJ
Eduardo de Miranda Batista - UFRJ	Pedro Colmar G. da Silva Velasco - UERJ
Franisco Carlos Rodrigues - UFMG	Remo Magalhães de Souza - UPA
José Guilherme Santos da Silva - UERJ	Ronaldo Carvalho Batista - UFRJ
Leandro Palermo Junior - UNICAMP	Sebastião A. L. de Andrade - PUC-RJ/UERJ
Luciano Rodrigues Ornelas de Lima - UERJ	Zacarias M. Chamberlain Pravia - FUPF
Lurano Mendes Bezerra - INB	



Social Program

The Reception Cocktail will be held in the Museu da República that is situated in Palácio do Catete, just on the side of the Hotel Novo Mundo. Further details on the easiest route to Museu da República will be provided at the appropriate time.

Date: September 8th 2010 Time: 6:00PM - 9:00PM



The Conference Dinner will be held in the Parque do Flamengo (the park in front of the Hotel). The Conference Organization will provide coaches that will depart from Hotel Novo Mundo at 7:45PM.

Date: September 9th 2010 Time: 8:00PM - 11:00PM



Registration Desk

The Registration Desk will be opened on Tuesday, September 7th from 4:00PM to 7:00PM.

Rio de Janeiro, September 2010

Eduardo Batista
Pedro Velasco
Luciano de Lima

PREFACE

The Stability and Ductility of Steel Structures, SDSS, is a series of international conferences that followed the original Structural Stability Research Council (SSRC) International Colloquia. This series of conferences started in 1972 and their previous editions took place in several different cities and countries, the last three were held in Timisara, Romania (1999), in Budapest, Hungary (2002) and in Lisbon, Portugal (2006). The SDSS conferences are intended to summarize the progress in theoretical, numerical and experimental research concerning the analysis and design of steel structures, with particular emphasis addressed to topics related to stability and ductility aspects. Special attention is always paid to new concepts and procedures and also to the background, development and application of rules and recommendations either appearing in recently published Codes and Specifications or about to be included in their upcoming versions.

The present Proceedings of the International Colloquium on Stability and Ductility of Steel Structures SDSS/Rio 2010 contains 130 peer-reviewed selected papers and eight invited keynote lectures presented during the conference in Rio de Janeiro, September 8-10, 2010. The opening chapter is addressed to the keynote lectures while following include all the full papers sorted according to the conference themes sessions.

The editors address their profound acknowledgements to those that supported the innumerable tasks of organization which were developed during the last two years in order to prepare with success the SDSS/Rio 2010. This conference is the result of the enthusiasm and dedication of these individuals. Special thanks are due to the conference sponsors UFRJ, UERJ, COPPE, FAPERJ, CNPq, CAPES and CBCA.

We are indebted to the authors of keynote lectures and selected papers, which conferred the high standard of their contributions included in this book as well as the quality of the oral presentations during the conference. Their effort to present their research results were very much appreciated and can be confirmed in the following pages of this book.

The editors gratefully thank the members of the Organizing and the Scientific Committees that supported the extensive work of reviewing the submitted papers. SDSS/Rio 2010 scientific standard is the result of this highly qualified work.

Finally, one last word of appreciation for the support provided by the staff of the Civil Engineering Program of COPPE-UFRJ, the visual design professionals from COPPE that developed the visual program of the conference, and the professionals from COPPE that supported the computational facilities that enabled the organization of the conference.

Global Conference Programme

	08/09/2010		09/09/2010		10/09/2010	
	Session 1	Session 2	Session 1	Session 2	Session 1	Session 2
8:00	Registration Opens		Registration Opens		Registration Opens	
8:15 - 8:30			Thin-Walled II	Dynamic Behavior II	Shells	Trusses, towers and masts
8:30 - 9:00	Open Session					
9:00 - 9:30	Keynote Speaker 01					
9:30 - 10:00	Keynote Speaker 02		Keynote Speaker 04		Keynote Speaker 07	
10:00 - 10:30	COFFEE BREAK		Keynote Speaker 05		Keynote Speaker 08	
10:30 - 11:00	Thin-Walled I	Dynamic Behavior I	Connections I	Members II	Thin-walled IV	Members III
11:00 - 12:00					LUNCH	
12:00 - 13:30						
13:30 - 15:30	Fire Engineering I	Composite Structures	Connections II	Plates	Thin-walled V	Members IV
15:30 - 16:00					COFFEE BREAK	
16:00 - 16:30	Keynote Speaker 03		Keynote Speaker 06		Connections III	Members V
16:30 - 17:45	Bridges and Footbridges Members I		Thin-Walled III	Fire Engineering II		End Session
17:45 - 18:00	Moving to Museu da Republica					
	Cocktail Reception at 6pm			Conference Dinner at 8pm		



Novo Mundo Hotel Convention Center

SDSS Rio 2010 PROGRAM - Wednesday - September 8th	
Fire engineering I Chair: Prof. A. Landesmann and Prof. I. Burges Room 1	Steel-concrete composite members and structures Chair: Prof. S. Andrade and Prof. P. Simão Room 2
13:30 - 13:45	INTERACTION DIAGRAMS FOR DESIGN OF CONCRETE-FILLED TUBULAR COLUMNS UNDER FIRE Rodrigo B. Caldas, João Batista M. Souza Jr. and Ricardo H. Faury
13:45 - 14:00	DUCTILITY OF SIMPLE STEEL CONNECTIONS IN FIRE J. Bulick Dawson, Ian W. Burgess, Roger J. Plank, Hongta Yu, Ying Hu
14:00 - 14:15	METHODOLOGY FOR RELIABILITY-BASED DESIGN OF STEEL MEMBERS EXPOSED TO FIRE Shahid Iqbal and Ronald S. Harichandran
14:15 - 14:30	CAPACITY REDUCTION AND FIRE LOAD FACTORS FOR STEEL COLUMNS EXPOSED TO FIRE Shahid Iqbal and Ronald S. Harichandran
14:30 - 14:45	STABILITY OF STEEL COLUMNS SUBJECTED TO FIRE Markus Knobloch, Diego Sonanni, Jacqueline Paulli and Mario Fontana
14:45 - 15:00	FIRE BEHAVIOR OF CONCRETE FILLED CIRCULAR HOLLOW SECTION COLUMNS WITH MASSIVE STEEL CORE Marin Neijenschiawer, Markus Knobloch and Mario Fontana
15:00 - 15:15	BUCKLING OF CONCRETE FILLED STEEL HOLLOW COLUMNS IN CASE OF FIRE Iago A. C. Pires, João B. C. Rodrigues and Jefferson Rêgo Silva
15:15 - 15:30	BUCKLING OF STEEL AND COMPOSITE STEEL AND CONCRETE COLUMNS IN CASE OF FIRE Antônio M. Correia and João Paulo C. Rodrigues
15:30 - 16:00	COFFEE BREAK

SDSS Rio 2010 PROGRAM - Wednesday - September 8th	
8:00	REGISTRATION OPENS
8:30 - 9:00	Open Session - HOW ALL OF IT STARTED - SOME REMINISCENCES ABOUT THE FIRST INTERNATIONAL COLLOQUIUM IN THE STABILITY SERIES Miroslava Skarlická Chair: Prof. P. Velasco and Prof. E. Balista
9:00 - 9:30	SOME ISSUE FOR COLUMN STABILITY CRITERIA Raúl Barboróvka Chair: Prof. P. Velasco and Prof. E. Balista
9:30 - 10:00	THE EFFECT OF EDGE SUPPORT ON TENSILE MEMBRANE ACTION OF COMPOSITE SLABS IN FIRE Anthony K. Abu and Ian W. Burgess Chair: Prof. P. Velasco and Prof. E. Balista
10:00 - 10:30	COFFEE BREAK
Thin-walled construction and cold-formed members I Chair: Prof. R. Zieman and Prof. A. Freitas Room 1	Dynamic behavior and analysis I Chair: Prof. J. G. Silva and Prof. L. Dunai Room 2
10:30 - 10:45	IMPERFECTIONS SENSITIVITY ANALYSIS OF PITCHED ROOF COLD-FORMED STEEL PORTAL FRAMES Dan Dubina, Víorel Ungureanu, Zsolt Nagy, Luis Nunes and Paul Penes
10:45 - 11:00	ON THE USE OF COLD-FORMED THIN-WALLED EXISTING MASONRY BUILDINGS FOR VERTICAL ADDITION OF G. Di Lorenzo, A. Fornisano, R. Landrino, F. Mazzolini, G. Terraciano, J. G. de S. Almeida, Luciano R. O. de Souza, Pedro J. G. de S. Almeida, Luciano R. O. de Souza, Nelson L. de A. Lima
11:00 - 11:15	EXPERIMENTAL STUDY ON COLD-FORMED STEEL LIPPED CHANNEL COLUMNS UNDERGOING LOCAL-DISTORTION GLOBAL-INTERACTION Eliane Souza dos Santos, Eduardo Bassetto, Dihar Camellini
11:15 - 11:30	DSM DESIGN OF LIPPED CHANNEL COLUMNS UNDERGOING LOCAL-DISTORTION GLOBAL MODE IN ERATION OF SEMI-RIGID CONNECTIONS Andréa D. Silva, Ricardo A.M. Silveira, Alexandre S. Galvão and Paulo B. Bongalves
11:30 - 11:45	STATIC AND DYNAMIC BEHAVIOR OF LENS-TYPE SHEAR PANEL DAMPERS FOR IGHWA BRIDGE BEARING Tatsunasa Takaku, Feng Chen, Takashi Harada, Masayuki Ishiyama, Nobuhiko Yamazaki, Tetsuhiko Aoki and Yusuke Fukumoto
11:45 - 12:00	NON-LINEAR DYNAMIC ANALYSIS OF STAYED STEEL COLUMNS TRAPEZOIDAL SHEETING Ricardo R. de Araújo, José G. S. da Silva, Pedro C. G. da S. Velasco, Sébastião A. L. de Andrade, Luciano R. O. de Lima and Luis A. P. Simões da Silva
12:00 - 13:30	LUNCH

SDSS Rio 2010 PROGRAM - Thursday - September 9th	
8:00	REGISTRATION OPENS
	Thin-walled construction and cold-formed members II Chair: Prof. A. Freitas and Prof. D. Camolin Room 1
8:15 - 8:30	THEORETICAL ANALYSIS OF PERFORATED BACK COLUMNS Antene M. S. Freitas, Marcella S. R. Freitas and Flávio T. Souza Chair: Prof. J. G. Silva and Prof. J. B. Junior Room 2
8:30 - 8:45	OPTIMIZATION OF COLD-FORMED STEEL CHANNEL USING THE DIRECT STRENGTH METHOD AND FINITE STRIP METHOD Gladimir de Campos Gigliotti, Ignacio Iurroz, Gustavo Mezzomo and Luciana Martin Chamberlain Pravia
8:45 - 9:00	EXPERIMENTAL INVESTIGATION OF HIGH STRENGTH COLD-FORMED SUPAC® SECTIONS IN SHEAR Cao Hung Pham and Gregory J. Hancock
9:00 - 9:15	EFFECTIVE DESIGN OF COLD-FORMED THIN-WALLED CHANNEL BEAMS WITH BENT EDGES OF FLANGES Ewa Magnuszka-Bianchi and Krzysztof Maguski
9:15 - 9:30	LATERAL BUCKLING OF STEEL SIGMA-CROSS-SECTION BEAMS WITH WEB HOLES Jindricha Melicher and Marcela Karazanova
9:30 - 10:00	MANUFACTURING SPECIFICATIONS FOR HOLLOW SECTIONS IN 2010 Jeffrey A. Packer Chair: Prof. R. Bjorhovde
10:00 - 10:30	COFFEE BREAK

SDSS Rio 2010 PROGRAM - Wednesday - September 8th	
16:00 - 16:30	LATEST DEVELOPMENTS IN THE GFT ANALYSIS OF THIN-WALLED STEEL STRUCTURES Dinar Canotini, Clímar Basaglia, Rui Bébano, Rodrigo Gonçalves and Nuno Silvestre Chair: Prof. E. Balista
	Bridges and footbridges Chair: Prof. M. Peil and Prof. D. Dubina Room 1
16:30 - 16:45	IMPROVED CROSS FRAME CONNECTION DETAILS FOR STEEL BRIDGES WITH SKEWED SUPPORTS Craig Quigley, Anthony Battistini, Todd A. Helwig, Karl Frank and Michael Enghardt
16:45 - 17:00	FLANGE THICKNESS TRANSITIONS OF BRIDGE GIRDER – BUCKLING BEHAVIOR IN GLOBAL BENDING A. Lechner, A. Taras and R. Geiner
17:00 - 17:15	A VISCO-EUCLASTIC SANDWICH SOLUTION FOR ORTHOTROPIC DECKS OF STEEL BRIDGES Ronaldo C. Batista, Emerson F. dos Santos Ramundo Vassconcelos, and Nicélie S. Peil
17:15 - 17:30	ELEGANCE AND ECONOMY - A NEW VIADUCT OVER THE RIVER LLORREGAT Peter Tanner, Juan L. Balleo and David Sant
17:30 - 17:45	DESIGN OF BEAM-TO-BEAM BUTT PLATE JOINTS IN COMPOSITE BRIDGES A. Lachal, S. S. Kang and S. Guezouli
17:45 - 18:00	ROBUST DESIGN - ALTERNATE LOAD PATH METHOD AS DESIGN STRATEGY Lars Röle and Ulrike Kuhlmann
	Moving to Museu da República Cocktail Reception at 8PM

SDSS'Rio 2010 PROGRAM - Thursday - September 9th			
	Connections II Chair: Prof. J. Packer and Prof. L. Bezerra Room 1	Plated structures and box girders Chair: Prof. D. Bed and Prof. M. Skaloud Room 2	
13:30 - 13:45	A NEW HYBRID TESTING PROCEDURE FOR THE STRUCTURAL ELEMENTS AND CONNECTIONS Carlo Andrea Castiglioni, Alberto Dreì and Roberto Gonçalves	THE INTERACTION BEHAVIOUR OF STEEL PLATES UNDER TRANSVERSE LOADING, BENDING MOMENT AND SHEAR FORCE Benjamin Braun and Ulrike Kuhmann	
13:45 - 14:00	PROPOSAL OF A THREE-DIMENSIONAL SEMI-RIGID COMPOSITE JOINT TESTS AND FINITE ELEMENT MODELS Beatriz Gil, Ruiro Goni and Eduardo Bayo	HYBRID STEEL PLATE GIRDERS SUBJECTED TO PATCH LOADING Roelando Chacón, Enrique Mirambell and Esther Real	
14:00 - 14:15	STRENGTH AND DUCTILITY OF BOLTED T-STUB MACROCOMPONENTS UNDER INGOTONIC AND CYCLIC LOADING Nicolaie Muntean, Daniel Graca, Adrian Dogaru and Dan Dubina	NUMERICAL AND EXPERIMENTAL RESEARCH IN TAPERED STEEL PLATE GIRDERS SUBJECTED TO SHEAR E. Real, A. Bodynek and E. Mirambell	
14:15 - 14:30	PREDICTION OF THE CYCLIC BEHAVIOR OF MOMENT RESISTANT BEAM-TO-COLUMN JOINTS OF COMPOSITE STRUCTURAL ELEMENTS Natalia Kovacs, László Dulai and László Csató	SHEAR STRENGTH OF STEEL PLATE WITH REINFORCED OPENING Bo Chen and K.S. Sivakumaran	
14:30 - 14:45	NUMERICAL MODELING OF JOINT DUCTILITY IN STEEL AND STEEL-CONCRETE COMPOSITE FRAMES Lesław Kwasiński and Marian Giełgiewski	CRACK INITIATION UNDER STATIC LOADS INCLUDING THE INFLUENCE OF RESIDUAL WELDING STRESSES Michael Voz and Helmut Saal	
14:45 - 15:00	INFLUENCE OF CHORD AXIAL LOAD ON THE STIFFNESS AND RESISTANCE OF WEDED T-JOINTS OF SHEAR MEMBERS Rui M. M. P. de Moraes, Luis F. Costa Neves and Luciano R. O. de Lima	THE FATIGUE AND SERVICEABILITY LIMIT STATES OF THE WEB OF STEEL GIRDERS SUBJECTED TO REPEATED LOADING M. Skaloud and M. Zámečník	
15:00 - 15:15	EXPERIMENTAL STUDIES OF BEHAVIOUR OF COMPOSITE BEAM-COLUMN FLUSH END PLATE CONNECTIONS SUBJECTED TO SEISMIC LOADING Olivia Mirza and Brian Uy	IMPERFECTIONS IN STEEL PLATED STRUCTURES AND THEIR IMPACT ON ULTIMATE STRENGTH J. Kalá, M. Skaloud, J. Meher and Z. Kalá	
15:15 - 15:30	MODELLING CONNECTIONS OF MOMENT RESISTING STEEL FRAMES FOR SEISMIC ANALYSIS L. Mota, A. T. da Silva, C. Rebolho, L. Simões da Silva and L. de Lima	IMPERFECTION SENSITIVITY ANALYSIS OF LONGITUDINALLY STIFFENED PLATED GIRDERS SUBJECTED TO END-IN-SHEAR INTERACTION F. Simiu and D. Bigg	
15:30 - 16:00		COFFEE BREAK	

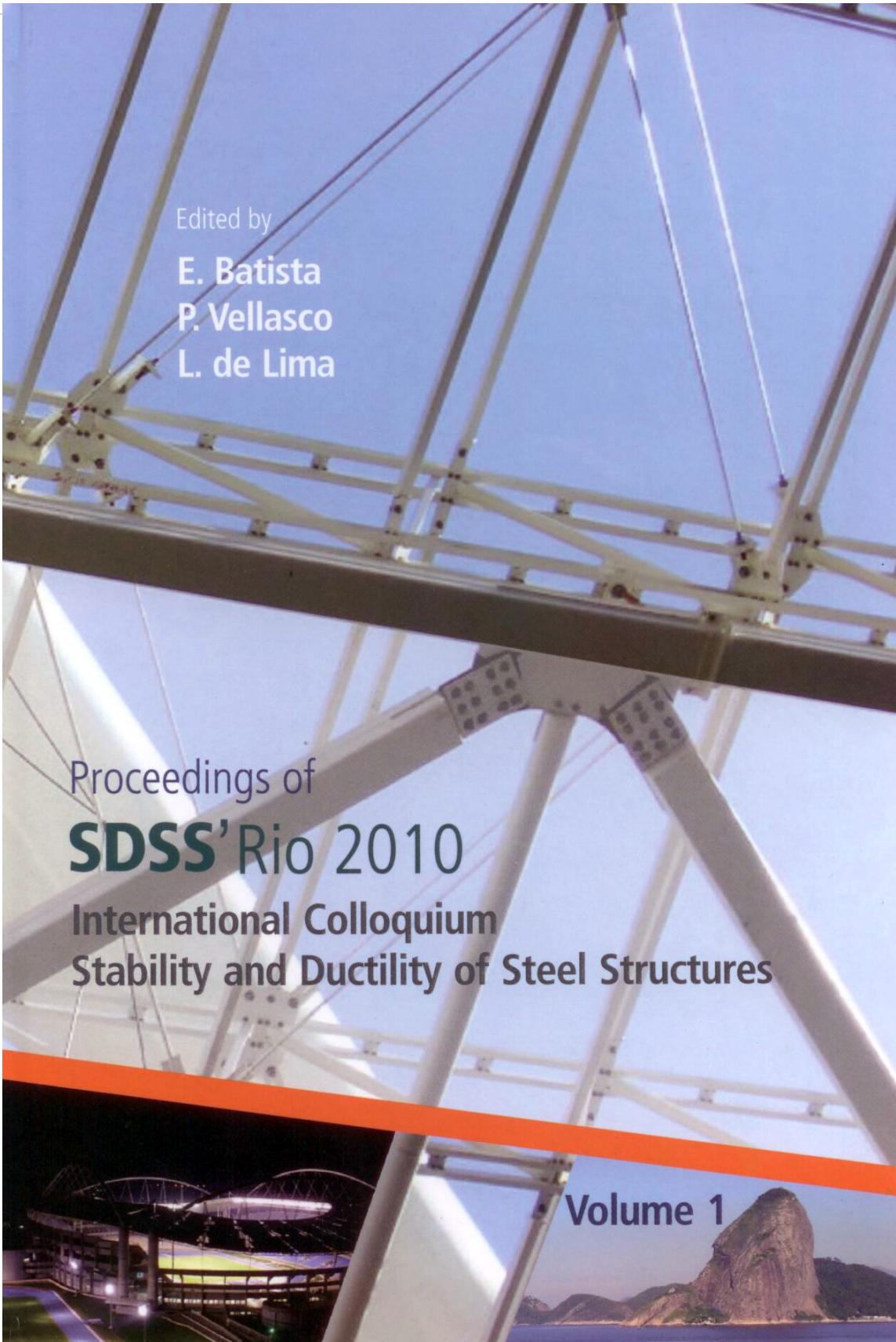
	Connections II Chair: Prof. J. P. Jaspart and Prof. L. Lima Room 1	NUMERICAL STUDY ON STAINLESS STEEL BEAM-COLUMNS WITH TRANSVERSE LOADING N. Lopes, P. Vila Real and L. Simões da Silva Chair: Prof. P. Velasco	NUMERICAL STUDY ON STAINLESS STEEL BEAM-COLUMNS WITH TRANSVERSE LOADING N. Lopes, P. Vila Real and L. Simões da Silva Chair: Prof. P. Velasco
10:30 - 11:00			Members' behavior: tension, compression, beams, beam-columns I Chair: Prof. E. Mirambell and Prof. A. Lachal
11:00 - 11:15	Connections I Chair: Prof. J. P. Jaspart and Prof. L. Lima Room 1	NUMERICAL ANALYSIS OF ENDPLATE BEAM-TO-COLUMN JOINTS UNDER BENDING AND AXIAL FORCE Monique C. Rodrigues, Luciano R. O. de Lima, Sébastião A. L. de Andrade, Pedro C. G. da S. Vallasco and José G. S. da Silva	STRENGTH AND DUCTILITY OF STEEL BEAMS WITH FLANGE HOLES K.S. Sivakumaran, P. Arasaratnam, and M. Tail
11:15 - 11:30	RESPONSE OF END-PLATE JOINTS UNDER COMBINED FORCES N. Battalino, A. Bignard and R. Zandomini	RESIDUAL STRESS MEASUREMENTS IN ROLLER-BENT HF100 SECTIONS R.C. Spoerlberg, H.H. Stijlber and J.C.D. Hoenderkamp	
11:30 - 11:45	INFLUENCE OF MEMBER COMPONENTS ON THE STRUCTURAL PERFORMANCE OF BEAM-TO-COLUMN JOINTS OF PITCHED ROOF PORTAL FRAMES WITH CLASS 3 AND 4 SECTIONS I. Mircea Cristinu, Dan Dubina	LATERAL TORSIONAL BUCKLING OF SPACE STRUCTURES WITH BEAMS - STRUCTURAL BEHAVIOR AND CALCULATION Richard Stroetmann	
11:45 - 12:00	APPLICATION OF EUROCODE 3 TO STEEL CONNECTIONS WITH FOUR BOLTS PER HORIZONTAL ROW J.-F. Demoneau, K. Weyland, J.-P. Jaspart and C. Müller	ANALYTICAL DERIVATION OF A GENERALIZED SLENDERNESS FORMULA FOR IN-PLANE BEAM-COLUMN DESIGN AND COMPARISON WITH INTERACTION CONCEPT FORMULAE Andreas Taras and Richard Graener	
12:00 - 13:30	LUNCH		

SDSS Rio 2010 PROGRAM - Friday - September 10th	
8:00 - 8:30	REGISTRATION OPENS
	Shells Room 1 Chair: Prof. R. Beale and Prof. P. B. Gonçalves Tusses, towers and masts Chair: Prof. T. Häwig and Prof. S. Andrade
8:30 - 8:45	INFLUENCE OF GEOMETRY ON THE DYNAMIC BUCKLING AND BIFURCATIONS OF CYLINDRICAL SHELLS Zenon N. del Prado and Paulo B. Gonçalves Rungsasit Wongtirapraph and Todd A. Häwig
8:45 - 9:00	BUCKLING OF A SHALLOW RECTANGULAR BIMETALLIC SHELL SUBJECTED TO OUTER LOADS AND TEMPERATURE M. Jakomin, F. Kosić
9:00 - 9:15	A GEOMETRY-BASED METHOD FOR THE STABILITY ANALYSIS OF FLATES Hesham Ahmed, John Duodola and Robert G. Stade Rodrigo C. Vieira, Jélio A. V. Requena, Newton de O. P. Junqueira and Lúcia H. M. Araújo
9:15 - 9:30	Critical loads and stability of an open elastic-plastic cylindrical shell with the core of variable stiffness J. Zemánek Natural period of steel chimneys Aleksander Koziowski, Małgorzata Wójnar and Leonard Ziemianski
9:30 - 10:00	DUAL-STEEL FRAMES FOR MULTISTORY BUILDINGS IN SEISMIC AREAS D. Dhingra Chair: Prof. E. Batista
10:00 - 10:30	ADVANCED STABILITY ANALYSIS OF REGULAR STIFFENED PLATES AND COMPLEX PLATED ELEMENTS László G. Vigh and László Dunaí Chair: Prof. L. S. da Silva
10:30 - 11:00	Thin-walled construction and cold-formed members IV Chair: Prof. G. Hancock and Prof. M. Fontana Room 1 Strength estimation of end failures in corrugated steel shear daphragms Nobuyuki Shimizu, Kikuo Ikarashi
11:00 - 11:15	PLATE BUCKLING ACCORDING TO EUROCODE 3. COMPARISON OF THE EFFECTIVE WIDTH METHOD AND THE REDUCED STRESS METHOD José A. Simón-Talero and Ana Caballero Anna M. Baruszcz, Damaris A. Gómezbarrios and María A.
11:15 - 11:30	FINITE ELEMENT MODELING OF ANGLE BRACING MEMBER BEHAVIOR IN EXPERIMENTALLY TESTED SUB-FRAME SPECIMENS Pedro D. Simão, Ana M. Grão Coelho and Francis K. Bijland
11:30 - 11:45	POST-BUCKLING BEHAVIOR AND STRENGTH OF SHEATHED COLD-FORMED STEEL STUD WALLS Pedro B. Dinis, Dina Camotim and Nuno Silvestre Luz C. M. Vieira Jr. and Benjamin W. Schaefer
11:45 - 12:00	FURTHER RESULTS ON THE APPLICATION OF THE EXTRAPOLATION TECHNIQUES Iraçah Zirkath
12:00 - 13:30	LUNCH

SDSS Rio 2010 PROGRAM - Thursday - September 9th	
16:00 - 16:30	DIRECT STRENGTH DESIGN OF COLD-FORMED SECTIONS FOR SHEAR AND COMBINED ACTIONS Cao Hung Pham and Gregory J. Hancock Chair: Prof. D. Canotim
	Thin-walled construction and cold-formed members III Chair: Prof. N. Silvestre and Prof. L. Gardiner Room 1
16:30 - 16:45	BUCKLING, POST-BUCKLING, COLLAPSE AND DESIGN OF TWO-SPAN COLD-FORMED STEEL BEAMS Olmar Basaglia and Dinar Camotim
16:45 - 17:00	TRAPEZOIDAL SHEETING MADE OF STAINLESS STEEL - TWO AMENDMENTS TO COMPLETE THE DESIGN CODES Thomas Nišek, Heimat Hügler, Karthage and Thomas Ummenhofer
17:00 - 17:15	PULL-THROUGH RESISTANCE OF TENSILE LOADED SCREW FASTENINGS OF THIN-WALLED SHEETING AND SANDWICH PANELS Thomas Mäslöv, Saska Kaplin and Karsten Kähnige
17:15 - 17:30	THE COLD WORK OF FORMING EFFECT IN STEEL STRUCTURAL MEMBERS Tim Cao and Christopher D. Men
17:30 - 17:45	FINITE ELEMENT ANALYSES OF HIGH STRENGTH COLD-FORMED SURFACE@ SECTIONS IN SHEAR Cao Hung Pham and Gregory J. Hancock
17:45 - 18:00	CLASSIFICATION OF STABILITY FAILURE MODES OF SANDWICH PANELS UNDER COMPRESSION LOADING GLOBAL AND LOCAL BUCKLING, CHIPPING AT SUPPORT LINE Saska Kaplin and Thomas Ummenhofer
20:00	Conference Dinner at 8PM

SDSS Rio 2010 PROGRAM - Friday - September 10th		
	Connections III Chair: Prof. F. Wald and Prof. L. Lima Room 1	Members' behavior: tension, compression, beams, beam-columns V Chair: Prof. R. Landolfo and Prof. A. Landesmann Room 2
16.00 - 16.15	EXPERIMENTAL ANALYSIS OF COMPOSITE CONNECTIONS USING SLAB MADE BY PRECAST JOISTS WITH LATTICE AND BRICKS William Bessa, Roberto M. Gonçalves, Caro A. Castiglioni and Luis Calado	FURTHER STUDIES ON THE LATERAL-TORSIONAL BUCKLING OF STEEL WEB-TAPERED BEAM COLUMNS: ANALYTICAL STUDIES Gabriel A. Jiménez, P.E., S.E.
16.15 - 16.30	LOSS OF PRELOAD IN BOLTED CONNECTIONS DUE TO EMBEDDING AND SELF LOOSENING Roland Frieder, Jörg Lange	LATERAL BUCKLING OF CONTINUOUS STEEL BEAMS WITH HINGES Peter Osterrieder, Stefan Richter, Matthias Friedrich
16.30 - 16.45	PLASTIC RESISTANCE OF L-STUBS JOINTS SUBJECTED TO TENSILE FORCES M. Couchaux, Iryane and M. Hijaj	EFFECTS OF DISTORTION ON THE SHEAR STIFFNESS OF RACK STRUCTURES Samvatsara R. Salia, Robert G. Beeler and Michael H.R. Gudey
16.45 - 17.00	COMPOSITE BEAM MODELING AT REAL SCALE INCLUDING BEAM-TO-BEAM JOINTS S. Guizzelli and A. Lachai	STABILITY AND DUCTILITY OF CASTELLATED COMPOSITE BEAMS SUBJECT TO HOGGING BENDING Marian A. Szajowski and Waa A. Saadat Khalil
17.00 - 17.15	RESISTANCE OF LASER MADE TRHS JOINTS UNDER COMPRESSION LOAD Jerzy K. Szczęsnik	COLD-FORMED STEEL AND CONCRETE COMPOSITE BEAMS: STUDY OF BEAM-TO-COLUMN CONNECTION AND REGION OF HOGGING BENDING María R. and Malte M.
17.15 - 17.30	INFLUENCE OF LOCAL PLASTIC BUCKLING OF A JOINT ON THE CARRYING CAPACITY OF THIN-WALLED TRUSSES Harmut Pastenak, G. Kubinec and V. Betschmann	DYNAMIC RESPONSE OF CONICAL AND SPHERICAL SHELL STRUCTURES SUBJECTED TO BLAST PRESSURE Tomasz Kubak, Zbigniew Krakowski, Katarzyna Kowal-Michalska, Radosław Mańka, Jacek Świnarski
17.30 - 17.45	End Session	

	Thin-walled constructions and cold-formed members V Chair: Prof. A. Plummer and Prof. M. Hijaj Room 1	Members' behavior: tension, compression, beams, beam-columns IV Chair: J. B. Junior and Prof. R. Zandonini Room 2
13.30 - 13.45	SHEAR BEHAVIOR OF TRAPEZOIDAL SHEETING WITHOUT SHEAR-PANEL CONSTRUCTION J. Lindner, F. Seidel	ELASTIC LATERAL-DISTORTIONAL BUCKLING OF SINGLY SYMMETRIC I-BEAMS: THE 2005 AISI SPECIFICATION Tadeh Zeikian and Jian Zhang
13.45 - 14.00	THIN BEAM STATIC STABILITY ANALYSIS BY AN IMPROVED NUMERICAL METHOD A. Kheil	SYSTEM STABILITY DESIGN CRITERIA FOR ADVANCED NONLINEAR INVESTIGATIONS OF A 50 m SPAN FRAME CASE STUDY: THE STEEL STRUCTURE OF THE ICE RINK, CITY OF TARGUJUDEA, ROMANIA Zsolt Nagy and I. Mircea Cristofor
14.00 - 14.15	INVESTIGATION OF THE TEST METHOD FOR DISTORTIONAL BUCKLING OF COMPRESSED PALLET RACK MEMBERS Miquel Casafont, Magdalena Pastor, Francesc Roire and Teimur Peñoz	ADVANCED NONLINEAR INVESTIGATIONS OF A 50 m SPAN FRAME CASE STUDY: THE STEEL STRUCTURE OF THE ICE RINK, CITY OF TARGUJUDEA, ROMANIA Zsolt Nagy and I. Mircea Cristofor
14.15 - 14.30	BEHAVIOR OF EXPANDED METAL PANELS UNDER SHEAR LOADING Phung Ngoc Dung, André Plummer	LOCAL POST-BUCKLING BEHAVIOR OF ELLIPTICAL TUBES Nuno Silvestre and Jerry Gardner
14.30 - 14.45	ANALYSIS OF CONTACT BUCKLING IN A BUILT UP COLD-FORMED STEEL BEAMS ASSEMBLED BY LASER WELDING F. Portelli, Q. Mammana, G. Di Lorenzo and R. Landolfi	PLASTIC DESIGN OF STAINLESS STEEL STRUCTURES Marios Theofanous and Jerry Gardner
14.45 - 15.00	CROSS-SECTIONAL STABILITY OF STRUCTURAL STEEL Mina S. Self and Benjamin W. Schaefer	INELASTIC BEHAVIOR OF PARTIALLY RESTRAINED STEEL FRAMES Renata G. da Silva and Armando C. C. Lavall
15.00 - 15.15	INFLUENCE OF HOLES ON THE BEHAVIOR OF COLD-FORMED STEEL SECTIONS UNDER COMPRESSION M.M. Pastor, M. Casafont, F. Roire, J. Bonada and J. Noguera	THE NON-DESTRUCTIVE MEASUREMENT OF RESIDUAL STRESSES IN STAINLESS STEEL ROLL-FORMED SECTIONS Rachel B. Cruise and Anna M. Paradowska
15.15 - 15.30	APPLICATIONS OF PURE AND COMBINED BUCKLING MODE CALCULATION OF THIN-WALLED MEMBERS USING THE FINITE ELEMENT METHOD Giovanni P. Mezzano, Ignacio Jiménez and Gladimir de C. Ongilletti	INFLUENCE OF FLANGE-TOWEB CONNECTION ON THE PATCH LOAD RESISTANCE OF BEAMS László G. Vigh
15.30 - 16.00	COFFEE BREAK	



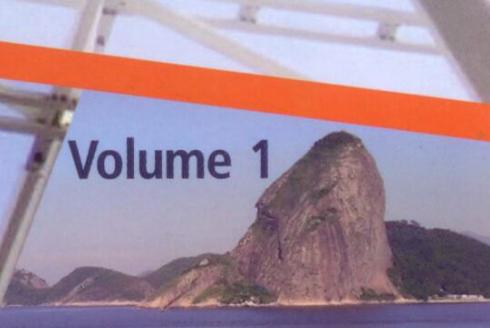
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Volume 1





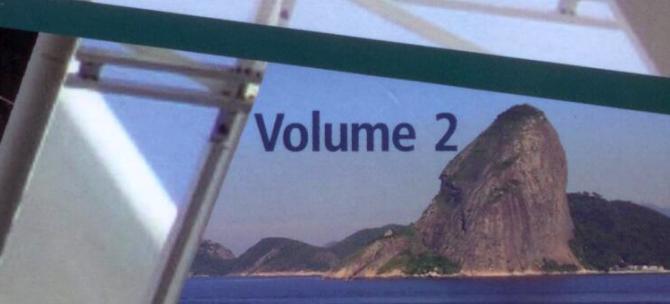
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Volume 2





SDSS'Rio 2010

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Stability and Ductility of Steel Structures

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SDSS' Rio 2010

International Colloquium
Stability and Ductility of Steel Structures

RIO DE JANEIRO - BRAZIL
08 - 10 SEPTEMBER 2010

ORGANISATION

Federal University of Rio de Janeiro, UFRJ
State University of Rio de Janeiro, UERJ
Structural Stability Research Council, SSRC

EDITORS

Eduardo de M. Batista
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PREFACE

The Stability and Ductility of Steel Structures, SDSS, is a series of international conferences that followed the original Structural Stability Research Council (SSRC) International Colloquia. This series of conferences started in 1972 and their previous editions took place in several different cities and countries, the last three were held in Timisoara, Romania (1999), in Budapest, Hungary (2002) and in Lisbon, Portugal (2006). The SDSS conferences are intended to summarize the progress in theoretical, numerical and experimental research concerning the analysis and design of steel structures, with particular emphasis addressed to topics related to stability and ductility aspects. Special attention is always paid to new concepts and procedures and also to the background, development and application of rules and recommendations either appearing in recently published Codes and Specifications or about to be included in their upcoming versions.

The present Proceedings of the International Colloquium on Stability and Ductility of Steel Structures SDSS'Rio 2010 contains 130 peer-reviewed selected papers and eight invited keynote lectures (8) presented during the conference in Rio de Janeiro, September 8-10, 2010. The opening chapter is addressed to the keynote lectures while following include all the full papers sorted according to the conference themes sessions.

The editors address their profound acknowledgements to those that supported the innumerable tasks of organization which were developed during the last two years in order to prepare with success the SDSS'Rio 2010. This conference is the result of the enthusiasm and dedication of these individuals. Special thanks are due to the conference sponsors UFRJ, UERJ, COPPE, FAPERJ, CNPq, CAPES and CBCA.

We are indebted to the authors of keynote lectures and selected papers which conferred the high standard of their contributions included in this book as well as the quality of the oral presentations during the conference. Their effort to present their research results were very much appreciated and can be confirmed in the following pages of this book.

The editors gratefully thank the members of the Organizing and the Scientific Committees that supported the extensive work of reviewing the submitted papers. SDSS'Rio 2010 scientific standard is the result of this highly qualified work.

Finally, one last word of appreciation for the support provided by the staff of the Civil Engineering Program of COPPE-UFRJ, the visual design professionals from COPPE that developed the visual program of the conference and the professionals from COPPE that supported the computational facilities that enabled the organization of the conference.

Rio de Janeiro, September 2010

Eduardo Batista
Pedro Vellasco
Luciano de Lima

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