

## LIGHTWEIGHT STRUCTURES in CIVIL ENGINEERING

### **CONTEMPORARY PROBLEMS**



Organized by Polish Chapters of

#### International Association for Shell and Spatial Structures

Lodz University of Technology Faculty of Civil Engineering, Architecture and Environmental Engineering

## XXVII LSCE

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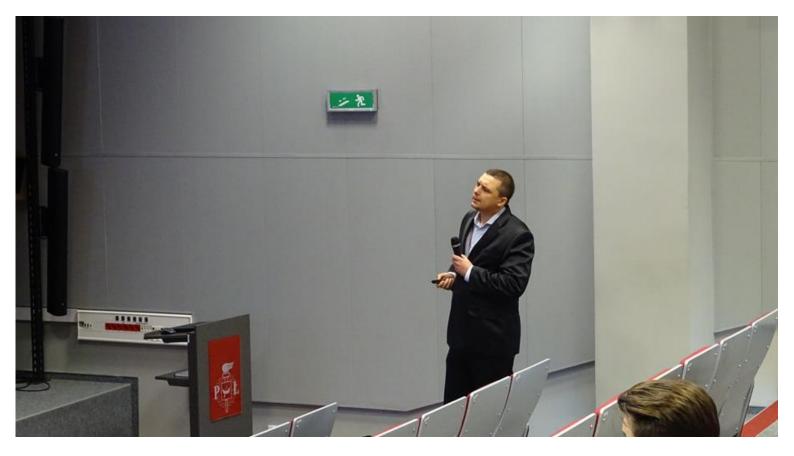














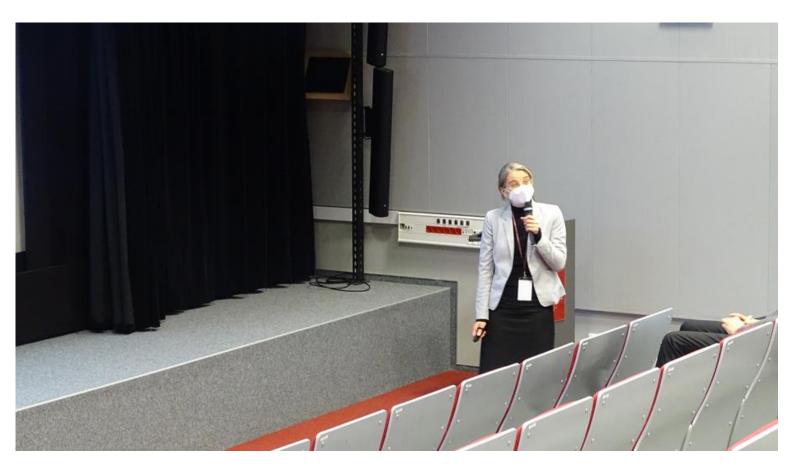












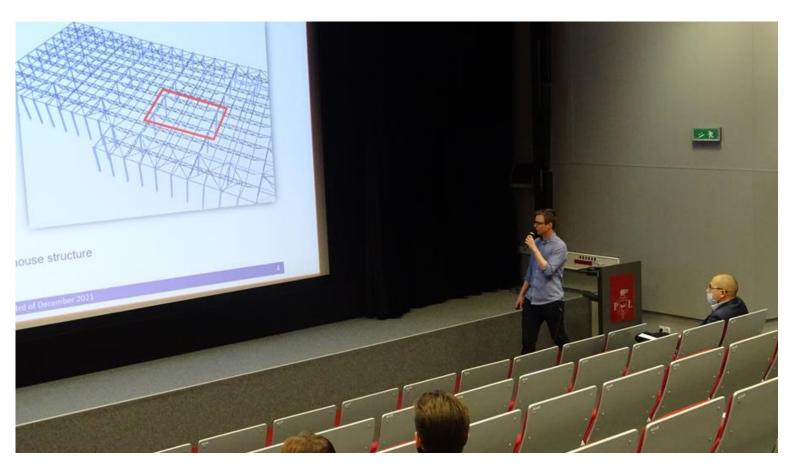








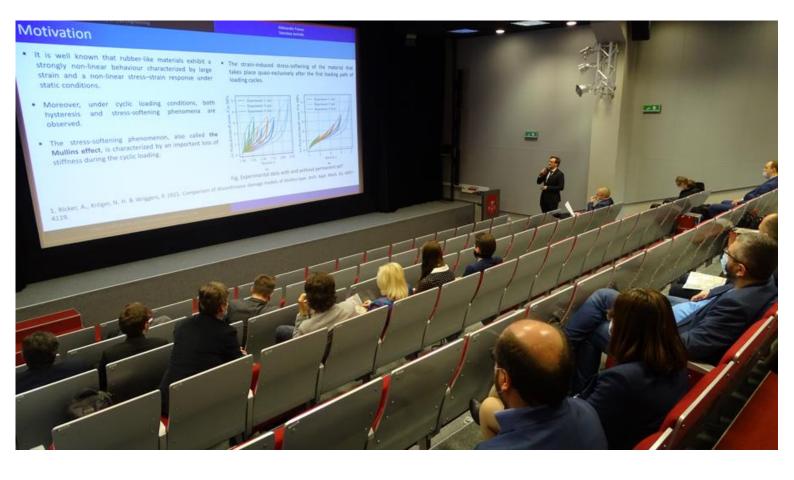












		And can der Franze Terreinen Speciale		
	Pseudo-hyperelasticity			
	The task exactors of themodynamics yield the Dasks/Dulem inequality for purely mechanical metral models	• The inequality yields $D = \left(\frac{1}{2}T_0 - \frac{\partial\Psi}{\partial \overline{\theta}_s} \frac{\partial\overline{\theta}_s}{\partial C} \right _{c=c^+} \right) \widehat{C} +$		
	$D = \frac{1}{2} \mathbf{T}_{p} \cdot \widehat{\mathbf{C}} - \Psi \ge 0$	$-\frac{\partial \Psi}{\partial \theta_{m}^{2}}W_{m} \ge 0.$	· · · ·	1 -
	<ul> <li>The specific here energy is a function of</li> </ul>	Sufficient conditions for thermomechanical consistency     arei		21
	$\Psi=\Psi\left(\widehat{H}_{\mu},\widehat{H}_{\mu}\right),$	$\begin{split} \mathbf{T}_{\mathbf{g}} &= 2 \left. \frac{\partial \Psi}{\partial \theta_{\mathbf{g}}} \right _{\mathbf{g} \in \mathcal{A}^{\mathbf{g}}} , \\ & \frac{\partial \Psi}{\partial \theta_{\mathbf{g}}} \leq 0 \end{split}$		
	$\vec{w}_a = \vec{w}_a(\vec{C}),$ $\vec{w}_a(i) = \max{\{\vec{w}_a(x), x \in i\}}$	$\frac{\partial \Psi}{\partial \theta^2} \leq 0$		
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# Group axioms

A set of elements  $\{a, b, c, ..., g, ...\}$  comprises a group G if the following axioms are satisfied:

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**1.** The product *C* of any two elements *a* and *b* of *G*, denoted by c = ab, must be a unique element which also belongs to *G*.

2. Among the elements of G, there must exist an identity element e which, when multiplied with any element a of the group, leaves the element unchanged: ea = ae = a

















Fig. 1. Beam-column connection: (a) real photo and (b) cross section of bolted connection<sup>[1]</sup>

es and Materials, 2017-06, Madrid, pp: 145-156.

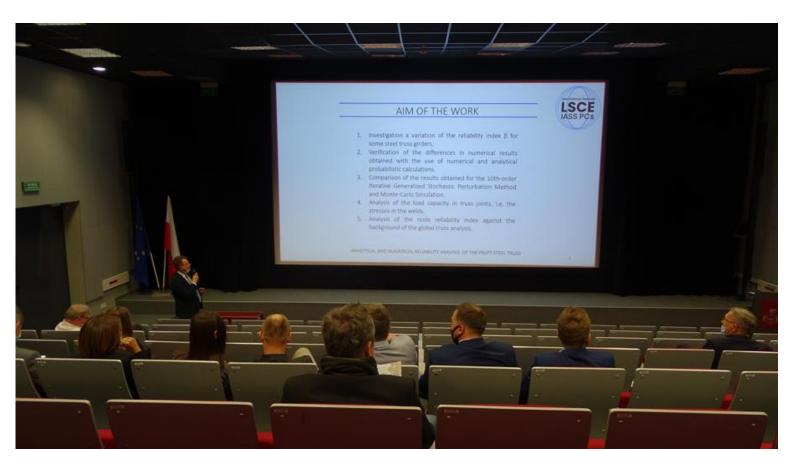
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arametric design makes it possible to present a general late of the hape and size of the designed object, as well as about specific construction solutions, in an algorithmic manner.

Such an algorithm includes one of more independence to which implementation defines the final project as a result unlike the classic opproach, the entitle tamily of products is sugged to classic opproach, the entitle tamily of products is sugged to

The selection of parameters that unequivocally and the result of optimization.

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