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Volume 99, 2012
11th International Conference on Computational Structures Technology, CST 2012; Dubrovnik, Croatia; 4 September 2012 through 7 September 2012; Code 102644

Placement of fibre reinforced polymer provision in no-tension vaults using the vault inequality system (Conference Paper)

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Abstract

In this paper, starting from the theoretical background previously developed by the authors concerning the statics of masonry vaults and aimed at the selection of families of load shapes equilibrated by sets of admissible solutions, a strategy is outlined for identifying the areas of the vault to be reinforced with FRP provisions. As shown in the numerical investigation, higher intensities of the stress state are then allowed by the introduction of the reinforcement and the local relaxation of some of the constraints of the problem is possible. © Civil-Comp Press, 2012.

Author keywords
Composites; Constraint relaxation; Masonry vaults; Reinforcement

Indexed keywords
Engineering controlled terms: Composite materials; Masonry materials
Constraint relaxation; Fibre reinforced polymers; Inequality systems; Local relaxation; Masonry vaults; Numerical investigations; Stress state
Engineering main heading: Reinforcement

ISSN: 17593433 ISBN: 978-190508854-6 Source Type: Journal Original language: English
Document Type: Conference Paper
Sponsors: Publisher: Civil-Comp Press

References (22)

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ISSN 1759-3433

CCP: 99
PROCEEDINGS OF THE ELEVENTH INTERNATIONAL CONFERENCE ON COMPUTATIONAL STRUCTURES TECHNOLOGY

Edited by: B.H.V. Topping
Paper 280
Placement of Fibre Reinforced Polymer Provision in No-Tension Vaults using the Vault Inequality System
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doi:10.4203/ccp.99.280
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Full Bibliographic Reference for this paper
A. Baratta, O. Corbi, "Placement of Fibre Reinforced Polymer Provision in No-Tension Vaults using the Vault Inequality System", in B.H.V. Topping, (Editor), "Proceedings of the Eleventh International Conference on Computational Structures Technology", Civil-Comp Press, Stirlingshire, UK, Paper 280, 2012. doi:10.4203/ccp.99.280

Keywords: composites, constraint relaxation, masonry vaults, reinforcement.

Summary
In this paper, starting from the theoretical background previously developed by the authors concerning the statics of masonry vaults and aimed at the selection of families of load shapes equilibrated by sets of admissible solutions, a strategy is outlined for identifying the areas of the vault to be reinforced with fibre reinforced polymer (FRP) provisions. As shown in the numerical investigation, higher intensities of the stress state are then allowed by the introduction of the reinforcement and the local relaxation of some of the constraints of the problem.

The fundamental premise of this paper describes the need for setting up procedures for properly identifying the type, shape and distribution of reinforcement to be introduced in masonry structures. The results from the wide theoretical research developed for establishing more reliable models, analytical methods and calculus codes for analysing masonry