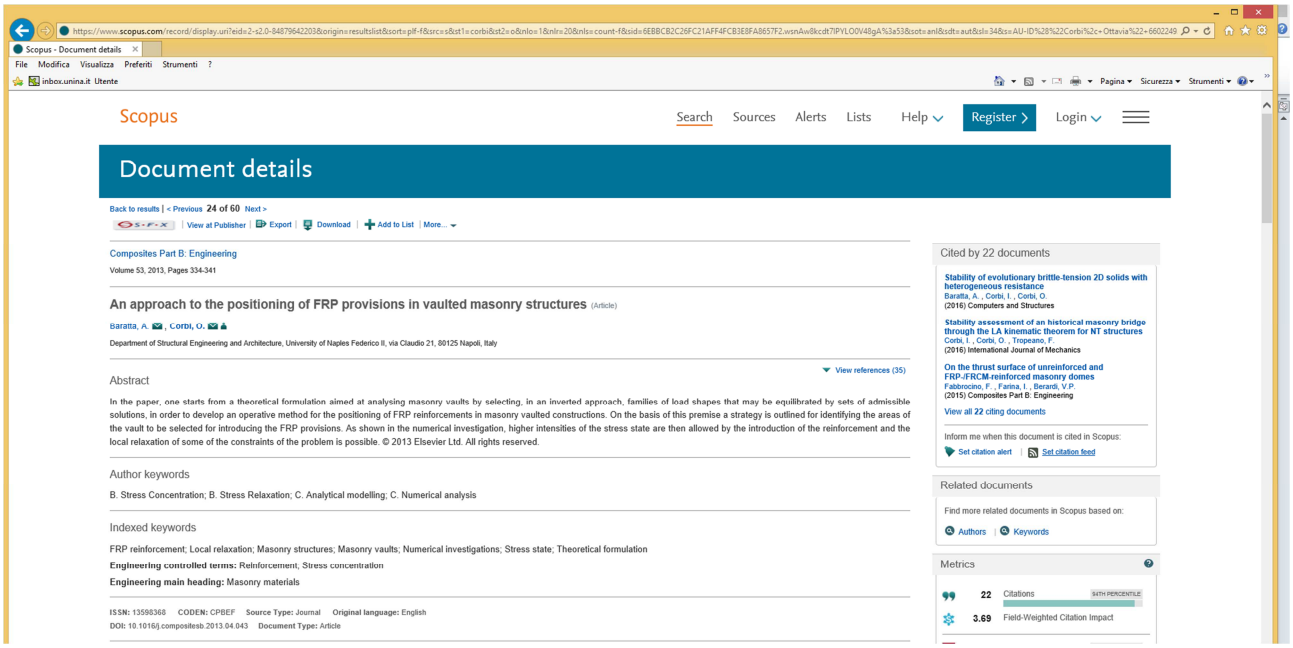
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Composites Part B: Engineering
Volume 53, 2013, Pages 334-341
An approach to the positioning of FRP provisions in vaulted masonry structures (Article)
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Abstract
In the paper, one starts from a theoretical formulation aimed at analysing masonry vaults by selecting, in an inverted approach, families of load shapes that may be equilibrated by sets of admissible solutions, in order to develop an operative method for the positioning of FRP reinforcements in masonry vaulted constructions. On the basis of this premise a strategy is outlined for identifying the areas of the vault to be selected for introducing the 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. © 2013 Elsevier Ltd. All rights reserved.
Author keywords
B. Stress Concentration; B. Stress Relaxation; C. Analytical modelling; C. Numerical analysis
Indexed keywords
FRP reinforcement; Local relaxation; Masonry structures; Masonry vaults; Numerical investigations; Stress state; Theoretical formulation
Engineering controlled terms: Reinforcement, Stress concentration
Engineering main heading: Masonry materials
ISSN: 13598368 CODEN: CPBEF Source Type: Journal Original language: English
DOI: 10.1016/j.compositesb.2013.04.043 Document Type: Article
Cited by 22 documents
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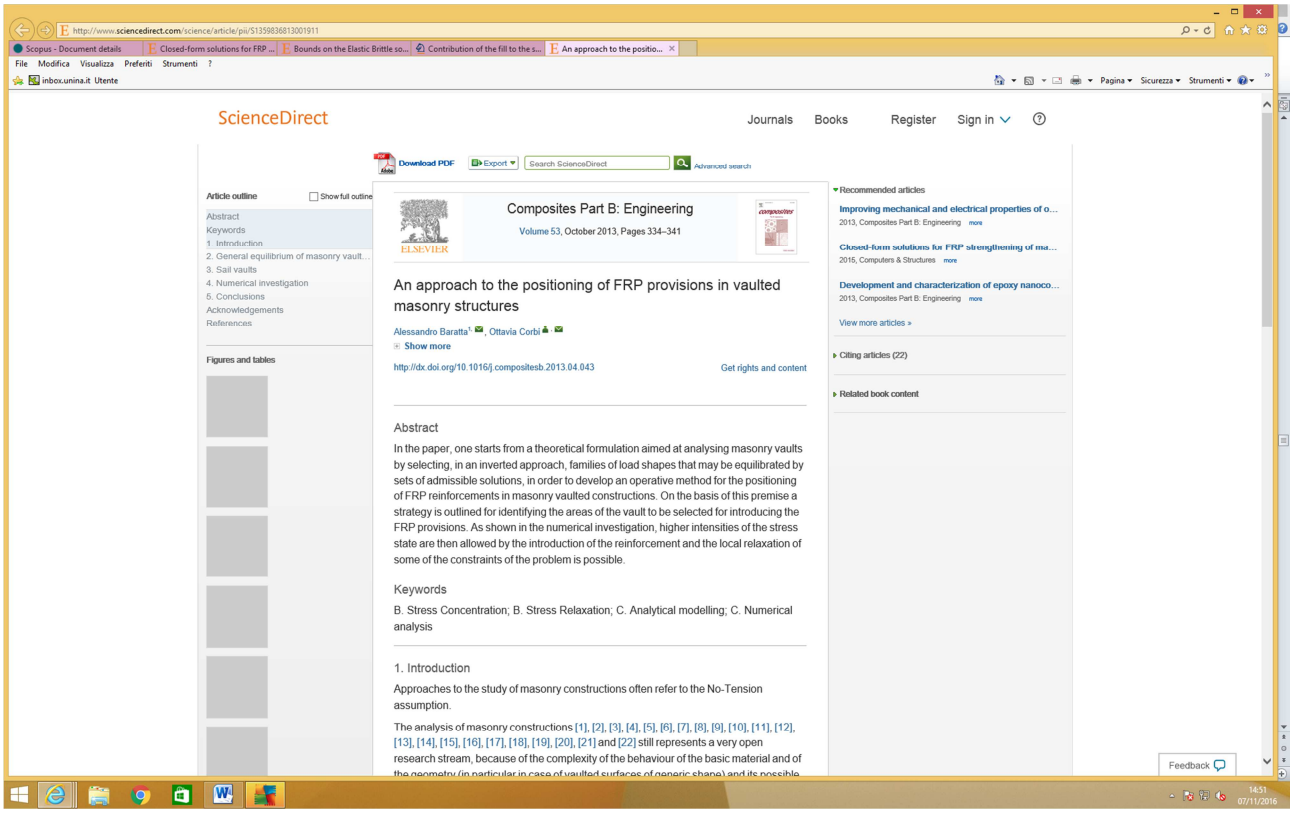
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Article outline
Abstract
Keywords
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2. General equilibrium of masonry vault...
3. Sail vaults
4. Numerical investigation
5. Conclusions
Acknowledgements
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Composites Part B: Engineering
Volume 53, October 2013, Pages 334–341
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Abstract
In the paper, one starts from a theoretical formulation aimed at analysing masonry vaults by selecting, in an inverted approach, families of load shapes that may be equilibrated by sets of admissible solutions, in order to develop an operative method for the positioning of FRP reinforcements in masonry vaulted constructions. On the basis of this premise a strategy is outlined for identifying the areas of the vault to be selected for introducing the 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.
Keywords
B. Stress Concentration; B. Stress Relaxation; C. Analytical modelling; C. Numerical analysis
1. Introduction
Approaches to the study of masonry constructions often refer to the No-Tension assumption.
The analysis of masonry constructions [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21] and [22] still represents a very open
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