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Applied Mechanics Reviews

Volume 63, Issue 4, 2010, Article number 040003

An approach to masonry structural analysis by the no-tension assumption - Part II: Load singularities, numerical implementation and applications

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Abstract

The present note follows the previous one, part I, where theoretical tools for analyzing structures made by no-tension (NT) material are presented in extensive form. Some significant results are presented in this part II of the note, ranging from the highlight of problems related to the treatment of singularities possibly occurring in the modeling of loads that burden on NT structures, and the development of tools for their treatment, to the specialization of general problems to planar and spatial structures, with the related ad hoc conceived analytical set up, original numerical tools, and noncommercial software. The implementation of the problems, deriving from the set up of the constrained optimization presented in part I of the note, is developed together with a number of applications, also providing, in some cases, the comparison of numerical, experimental, and/or field evidence referred to masonry structures, which finally validates the applicability of the adopted approach for the analysis of masonry constructions. © 2010 American Society of Mechanical Engineers.

Indexed keywords

Masonry structures; Numerical implementation; Numerical tools; Spatial structure

Engineering controlled terms: Masonry materials; Structural analysis

Engineering main heading: Constrained optimization

ISSN: 00036800 CODEN: AMREA Source Type: Journal Original language: English

DOR: 10.1115/1.4002791 Document Type: Article

Cited by 28 documents

Stability of evolutionary brittle-tension 2D solids with heterogeneous resistance  
Baratta, A., Corbi, O., Corbi, O.  
(2016) Computers and Structures

Stability assessment of an historical masonry bridge through the LA kinematic theorem for NT structures  
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An Approach to Masonry Structural Analysis by the No-Tension Assumption—Part II: Load Singularities, Numerical Implementation and Applications

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Appl. Mech. Rev. 63(4): 040003 (Jan 13, 2011) (21 pages)

doi:10.1115/1.4002791

History: Received September 22, 2010; Revised October 14, 2010; Published January 13, 2011; Online January 13, 2011

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Abstract

Abstract | Introduction | Treatment of Nonregularities and Discontinuities of Load Patterns | Application of Energy Theorems to NT Structures: FEM and Numerical Methods | Conclusions and Final Comments | Acknowledgments | References

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