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NUMERICAL ANALYSIS OF CABLE-TRUSS STRUCTURES

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Review of the work submitted for the Academician Bažant Prize

Subject of the work   The submitted work is dedicated to the application of the dynamic relaxation method to simulations of cable truss structures with and without pre-stress. After explaining the essentials of the method (including a concise presentation of the main equations), the author presents two illustrative examples of truss structures combined with a single cable. The results obtained with the dynamic relaxation method are compared against the results of the conventional Newton-Raphson procedure and a good agreement is found. All results were obtained with MATLAB scripts developed by the author.

Organization of the work   The report consists of 11 pages (in the two-column format), in which the author introduces the method in a compact way, covering the governing equations, leapfog/Verlet time integration algorithm, the setting of fictitious masses, and of the kinetic damping. The performance of the method is demonstrated on two benchmark problems; the results are very detailed and nicely illustrate the basic features of the method.

Contributions   In my opinion, the submitted work contains the following original contributions and results:

- an elegant, concise, and accessible explanation of the dynamic relaxation method,
- a detailed presentation of two well-chosen validation examples,
- a convincing discussion of the main advantages and disadvantages of the method.

Overall evaluation   I really enjoyed reading this contribution, it is interesting, logically organized, and written in a good English. In my opinion, this work is a valuable contribution to the *Academician Bažant competition*.

Prague, April 20, 2016

(Jan Zeman)