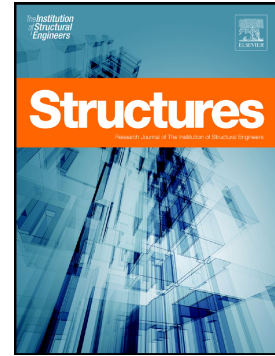


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## NONLINEAR DYNAMIC BEHAVIOR OF CABLE NETS SUBJECTED TO WIND LOADING

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**Abstract.** The nonlinear dynamic behavior of saddle-form cable nets subjected to wind actions is studied. The pressure coefficients are obtained by adjusting the recommendations of Eurocode 1 regarding vaulted and duopitch roofs. Artificial wind velocity time-histories are numerically generated according to the geometry of the problem and the wind exposure (wind direction and terrain roughness). The importance of the consideration of the aerodynamic admittance and coherence is also investigated. Nonlinear dynamic analyses are conducted and the results are compared with the ones calculated by the equivalent static method proposed by Eurocode 1. Parametric analyses show that cable nets with small values of the non-dimensional parameter  $\lambda^2$  exhibit large oscillation amplitudes, while large differences between static and dynamic analyses are consistently noted, although both approaches take into account the geometric nonlinearity of the system.

**Keywords:** saddle form cable net; geometric nonlinearity; equivalent static method; nonlinear dynamic response; artificial wind velocity time-histories.

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