

Investigate and Solving Analytically at Vibrational structures (In Arched Beam to Bridges) by New Method “AGM”

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Abstract : Analyzing and modeling the vibrational behavior of arched bridges during the earthquake in order to decrease the exerted damages to the structure is a very hard task to do. This item has been done analytically in the present paper for the first time. Due to the importance of building arched bridges as a great structure in the human being civilization and its specifications such as transferring vertical loads to its arcs and the lack of bending moments and shearing forces, this case study is devoted to this special issue. Here, the nonlinear vibration of arched bridges has been modeled and simulated by an arched beam with harmonic vertical loads and its behavior has been investigated by analyzing a nonlinear partial differential equation governing the system. It is notable that the procedure has been done analytically by AGM (Akbari, Ganji Method). Furthermore, comparisons have been made between the obtained results by numerical Method (rkf-45) and AGM in order to assess the scientific validity.

Keywords : new method (AGM), arched beam bridges, angular frequency, harmonic loads

Conference Title : ICACE 2015 : International Conference on Advances in Civil Engineering

Conference Location : Berlin, Germany

Conference Dates : September 14-15, 2015