

## عنوان مقاله:

DYNAMIC CHARACTERIZATION OF CABLE-STAYED BRIDGES: A COMPARATIVE ANALYSIS

## محل انتشار:

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## خلاصه مقاله:

Cable-stayed bridges usually show long fundamental periods, aspect that influences their dynamic behaviour. However, their flexibility and dynamics characteristics depend on several parameters such as the main span length, stay cable layout and support conditions. First vibration modes are very long, mainly related to deck modes. They are followed by cable vibration modes or tower modes that can be coupled with the deck depending on the support conditions. For the above mentioned, an exact modelling for the deck and cables can be very important for a precise dynamic analysis, being necessary an adequate assessment of the natural frequencies and modal shapes, not only for the seismic response analysis but also for wind effects and traffic loads. The present research studies the main modal characteristics of a concrete cable-stayed bridge, considering a 3D - finite element model for the bridge and taking into account a single spine model for the deck and a multi-cable formulation with the incorporation of tensiononly members for the cables to consider the spatial vibration of them and their coupling with the deck. The comparative analysis considers two stay cable layouts: fan pattern and harp pattern. Two options are considered for the deck: a slab-type deck (flexible) and a hollow box-type deck (rigid), aspect that considers different cable spacing. Two deck levels are considered: 30 m and 60 m, aspect that affects the transverse and longitudinal stiffness. Results reflect the importance of an adequate modal analysis in the comprehension and assessment of the dynamic behaviour of cable-stayed bridges.

## کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/16207>

