

## Free Vibration Analysis of Pinned-Pinned and Clamped-Clamped Equal Strength Columns under Self-Weight and Tip Force Using Differential Quadrature Method

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**Abstract :** The strength criterion is an important condition of great interest to guarantee the stability of the structural elements. The present work is based on the study of the free vibration of Euler's Bernoulli column of equal strength in compression while considering its own weight and the axial load in compression and tension subjected to symmetrical boundary conditions. We use the differential quadrature method to investigate the first fifth natural frequencies parameters of the column according to the different forms of geometrical sections. The results of this work give help in making a judicious choice of type of cross-section and a better boundary condition to guarantee good stability of this type of column in civil constructions.

**Keywords :** free vibration, equal strength, self-weight, tip force, differential quadrature method

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