## عنوان مقاله:

Dynamical stability of cantilevered pipe conveying fluid in the presence of linear dynamic vibration absorber

## محل انتشار:

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## خلاصه مقاله:

When the velocity of fluid flow in a cantilevered pipe is successively increased, the system may become unstable and flutter instability would occur at a critical flow velocity. This paper is concerned with exploring the dynamical stability of a cantilevered fluid-conveying pipe with an additional linear dynamic vibration absorber (DVA) attachment. It is endeavoured to show that the stability of the pipe may be considerably enhanced due to the presence of DVA. The quasi-analytical results show that the energy transferred from the flowing fluid to the pipe may be partially transferred to the additional mass. In most cases, thus, the critical flow velocity at which the pipe becomes unstable would become larger, meanwhile the flutter instability of the DVA is not easy to achieve. In such a fluid-structure interaction system, it is also found that flutter instability may first occur in the mode of the DVA. The effects of damping coefficient, weight, location and spring stiffness of the DVA on the critical flow velocities and nonlinear oscillations of .the system have also been analyzed

## کلمات کلیدی:

Pipe conveying fluid, Linear dynamic vibration absorber, Stability, Critical flow velocity, Nonlinear oscillation