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ABOUT THE NON-LINEAR VIBRATIONS OF A MECHANICAL SYSTEM

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ABSTRACT

In this paper it is shown that we can find approximate analytical solutions for the differential equation $\ddot{x}+\mu f\left(\dot{x},x\right)+\omega_0^2 x=0$, *which describes free unlimited vibrations of the mechanical systems for* μ *low paramethers. We use the method of the variation of the constants and we consider for the function* $f\left(\dot{x},x\right)$ *which includes the non-linear of the system, a general expression, such as* $f\left(x,x\right)=\sum_{i,j=0}^{n} a_{ij}x^i\cdot x^j$