

.1

$M -$, $m -$, $u -$
 $x -$ 2 , $c^2 -$ 1 , $F -$
 $t -$.

$$x = x(t_0, t_1, t_2 \dots), \quad y = y(t_0, t_1, t_2 \dots), \quad t_i = v^i t$$

$$x(t) = x_0 + vx_1 + v^2 x_2 + \dots, \quad y(t) = y_0 + vy_1 + v^2 y_2 + \dots$$

$v :$

$$x = x_0 + vx_1 = e^{-\frac{x(1-s)}{2M}vt} (\cos\{\Omega(1-v)\}t \cdot (C_1 x_1 + C_2 x_2) + \sin\{\Omega(1-v)\}t \times$$

$$\times (C_1 x_2 - C_2 x_1)) + e^{\frac{xS_1}{2m}vt} (C_3 \cos S_3 t - C_4 \sin S_3 t) + (F_2 + vF_5) \cos\{t + vF_6 \sin\{t,$$

$$y = y_0 + vy_1 = e^{-\frac{x(1-s)}{2M}vt} (C_2 \cos\{\Omega(1-v)\}t + C_1 \sin\{\Omega(1-v)\}t) +$$

$$+ S_1 v e^{\frac{xS_1}{2m}vt} (C_3 \cos S_3 t - C_4 \sin S_3 t) + (F_1 + vF_3) \cos\{t + vF_4 \sin\{t,$$

$$: \quad x^-(t_k) = x^+(t_k) = x \max,$$

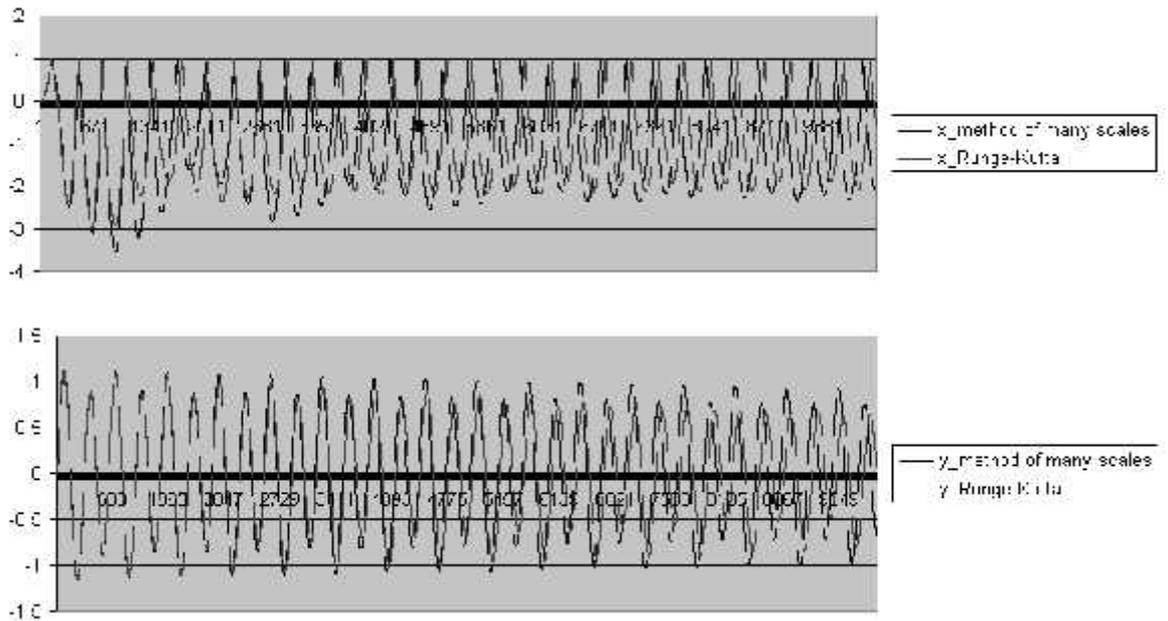
$$\dot{x}(t_k^+) = -e\dot{x}(t_k^-), \quad y^-(t_k) = y^+(t_k), \quad \dot{y}^-(t_k) = \dot{y}^+(t_k),$$

$$, t_k - , x \max -$$

$$C_i \quad (i=1 \div 4)$$

$$x(0) = 0; \dot{x}(0) = 0; y(0) = 0; \dot{y}(0) = y_0.$$

$\epsilon = 0.01, y_0 = 2, x_{max} = 1, e = 0.8, x = 2, S = 2, M = 1, m = 1, \nu = 0.01, u = 10, F = 0.5,$
 $t = 1$ (.2).



.2

: Lamarque C.H., Janin O. Modal analysis of mechanical systems with impact non-linearities: limitations to a modal superposition. Journal of Sound and Vibration (2000).

539.3

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