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CORRECTION

Correction to: Crack mathematical modeling to study the vibration analysis of cracked micro beams based on the MCST

Abbas Rahi[1]

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In the original publication of this article, the Eqs. (20), (21), (52), (54), (55), (56) and Figs. 4–15 were incorrectly published. The author would like to correct them as follows:

The Eqs. (20), (21), (52), (54), (55), and (56) should be corrected as follows:

$$U_c = \frac{(1-\vartheta^2)bh}{E}\int_0^\eta (K_{IM})^2 d\eta \tag{20}$$

$$C = \left[1 + \frac{12}{(1+\vartheta)(1-\eta)^2}\left(\frac{l}{h}\right)^2\right]\left[\frac{(1-\vartheta^2)bh}{E}\frac{\partial^2}{\partial M^2}\int_0^\eta (K_{IM})^2 d\eta\right] \tag{21}$$

$$\frac{dw_2}{dx}(L_c) - \frac{dw_1}{dx}(L_c) = \frac{d^2 w_1}{dx^2}(L_c) \times \frac{S}{K_t} \tag{52}$$

$$Q_{61} = \beta\cos(\beta L_c) - \frac{S\beta^2}{K_t}\sin(\beta L_c);$$

$$Q_{62} = -\beta\sin(\beta L_c) - \frac{S\beta^2}{K_t}\cos(\beta L_c)$$

$$Q_{63} = \beta\cosh(\beta L_c) + \frac{S\beta^2}{K_t}\sinh(\beta L_c); Q_{64} = \beta\sinh(\beta L_c) + \frac{S\beta^2}{K_t}\cosh(\beta L_c) \tag{54}$$

$$C = \frac{(1-\vartheta^2)bh}{E}\frac{\partial^2}{\partial M^2}\int_0^\eta (K_{IM})^2 d\eta \tag{55}$$

$$K_t = \frac{1}{C} = \left[\frac{(1-\vartheta^2)bh}{E}\frac{\partial^2}{\partial M^2}\int_0^\eta (K_{IM})^2 d\eta\right]^{-1} \tag{56}$$

Also, Figs. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 should be corrected as follows:

The original article can be found online at https://doi.org/10.1007/s00542-018-3768-7.

✉ Abbas Rahi
a_rahi@sbu.ac.ir

[1] Faculty of Mechanical and Energy Engineering, Shahid Beheshti University, A.C., Tehran, Iran

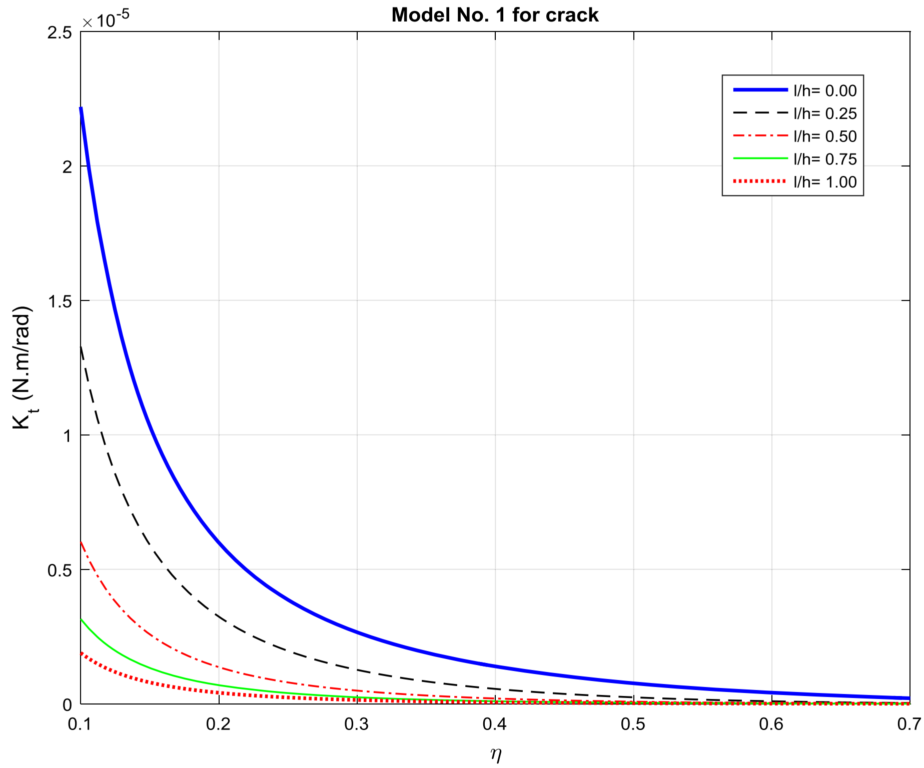


Fig. 4 Torsional spring stiffness at the crack location of the microbeam with considering the SIF in model No. 1 for crack versus crack depth ratio $\eta = a/h$ for different values of dimensionless material length scale parameter l/h

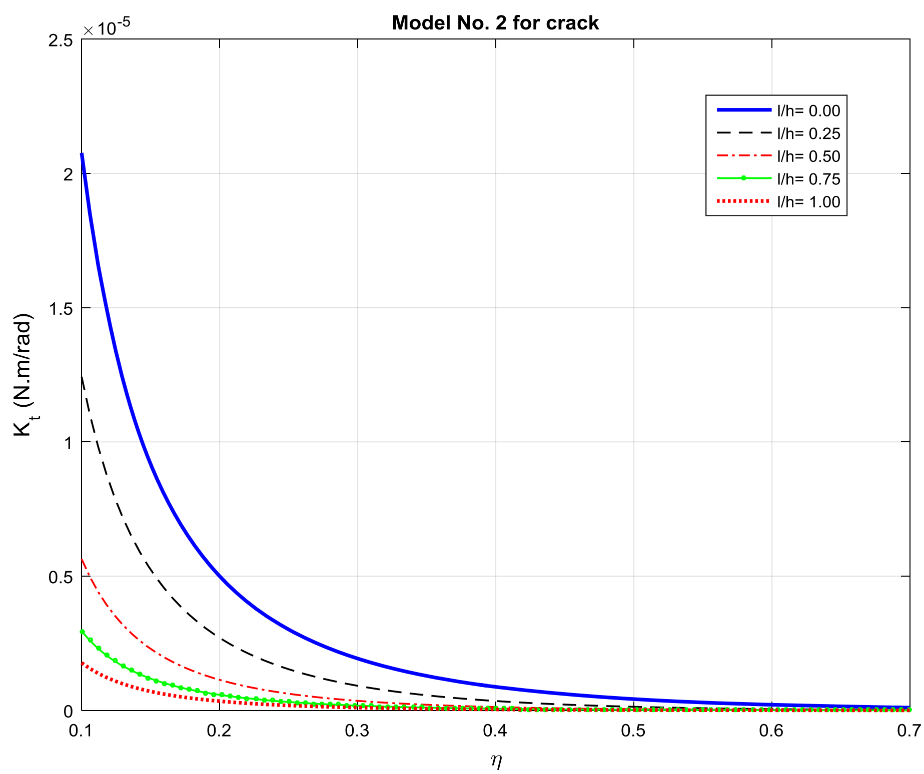


Fig. 5 Torsional spring stiffness at the crack location of the microbeam with considering the SIF in model No. 2 for crack versus crack depth ratio $\eta = a/h$ for different values of dimensionless material length scale parameter l/h

Fig. 6 Torsional spring stiffness at the crack location of the microbeam with considering the SIF in model No. 3 for crack versus crack depth ratio $\eta = a/h$ for different values of dimensionless material length scale parameter l/h

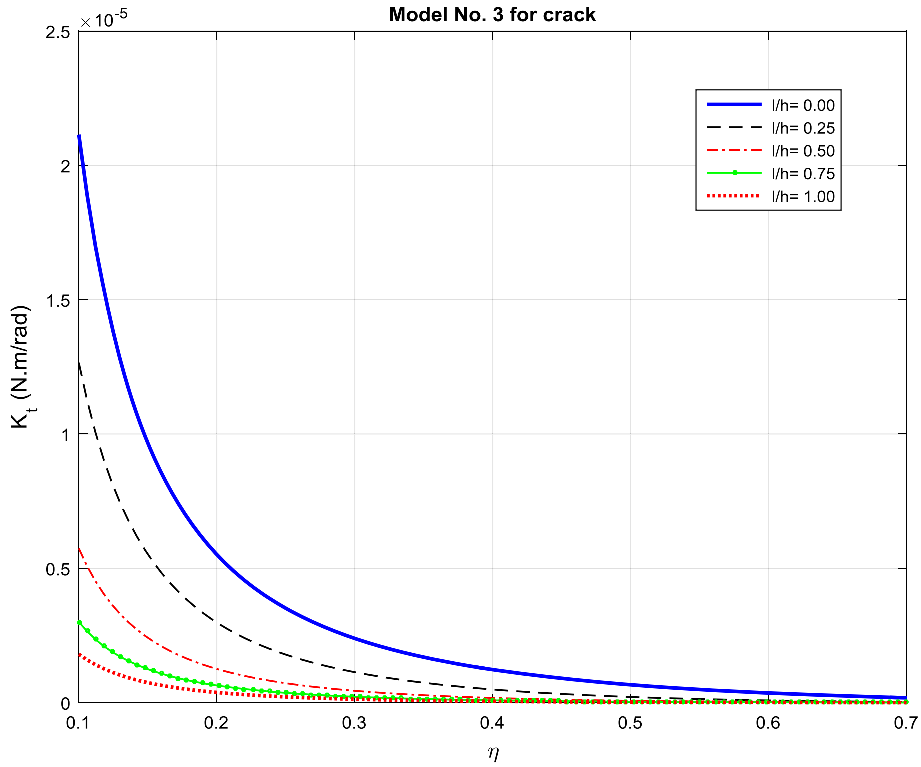
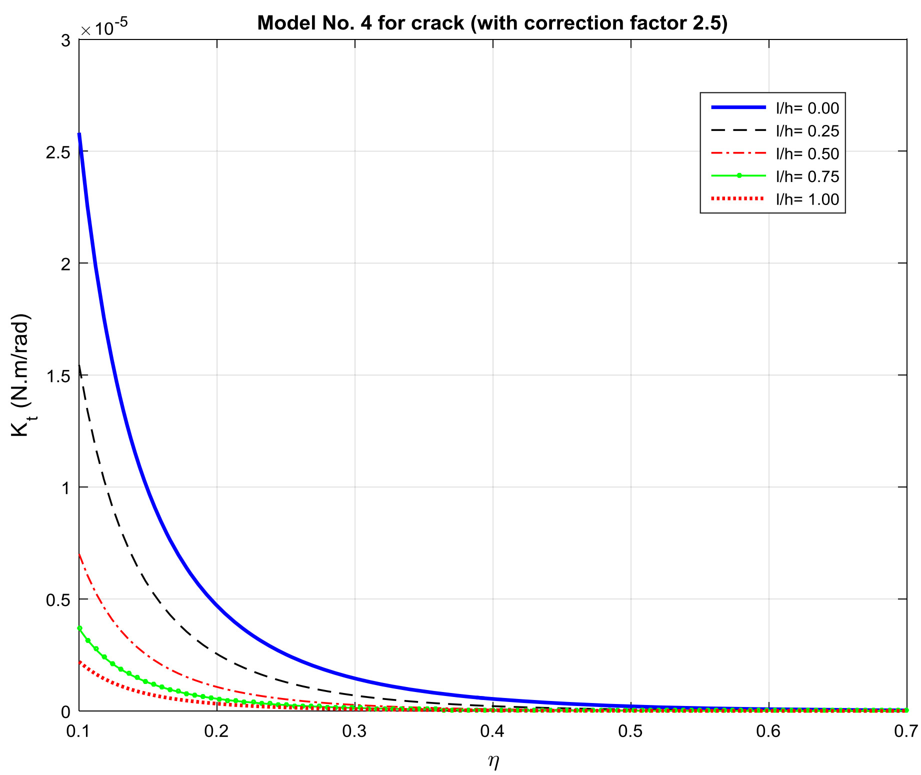


Fig. 7 Torsional spring stiffness at the crack location of the microbeam with considering the SIF in model No. 4 for crack versus crack depth ratio $\eta = a/h$ for different values of dimensionless material length scale parameter l/h



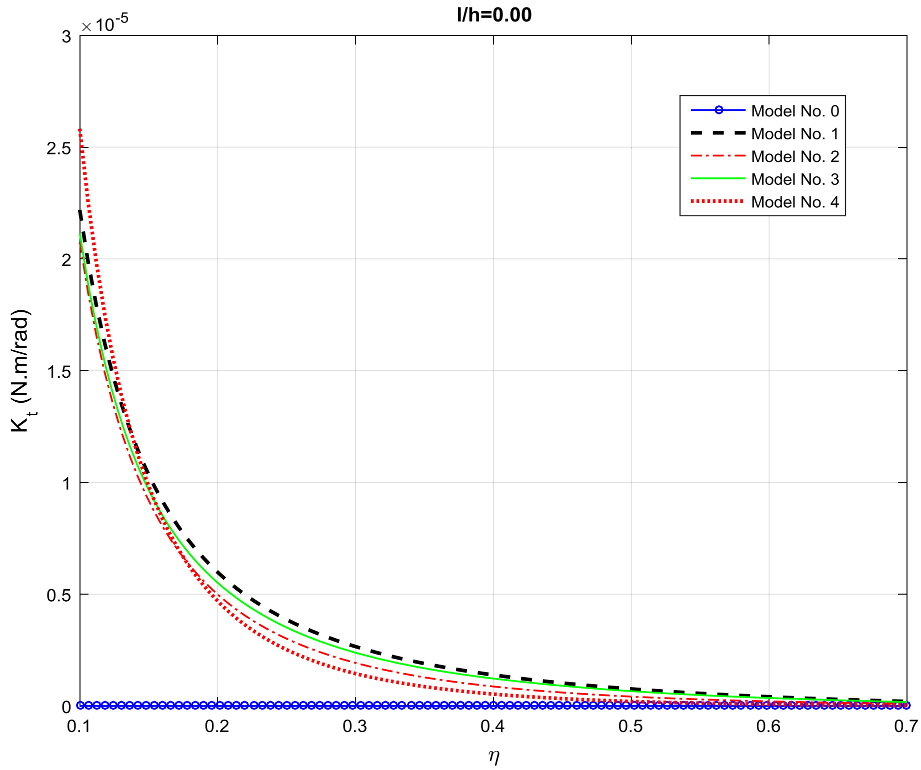


Fig. 8 Torsional spring stiffness at the crack location of the microbeam versus crack depth ratio $\eta = a/h$ for different models of crack at $\frac{l}{h} = 0$

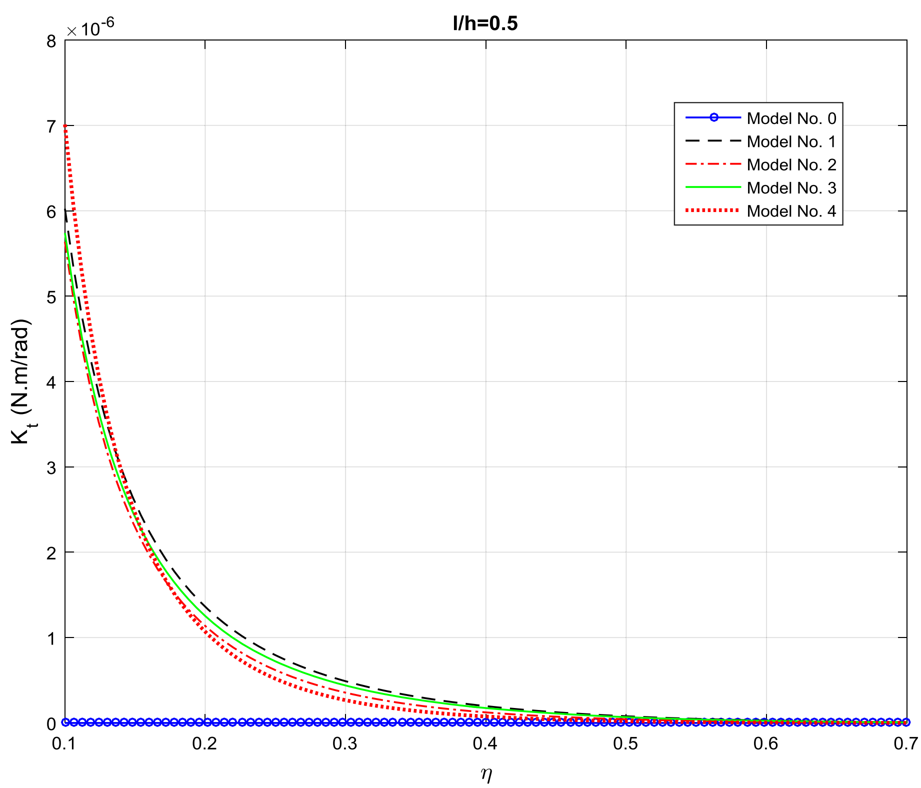


Fig. 9 Torsional spring stiffness at the crack location of the microbeam versus crack depth ratio $\eta = a/h$ for different models of crack at $\frac{l}{h} = 0.5$

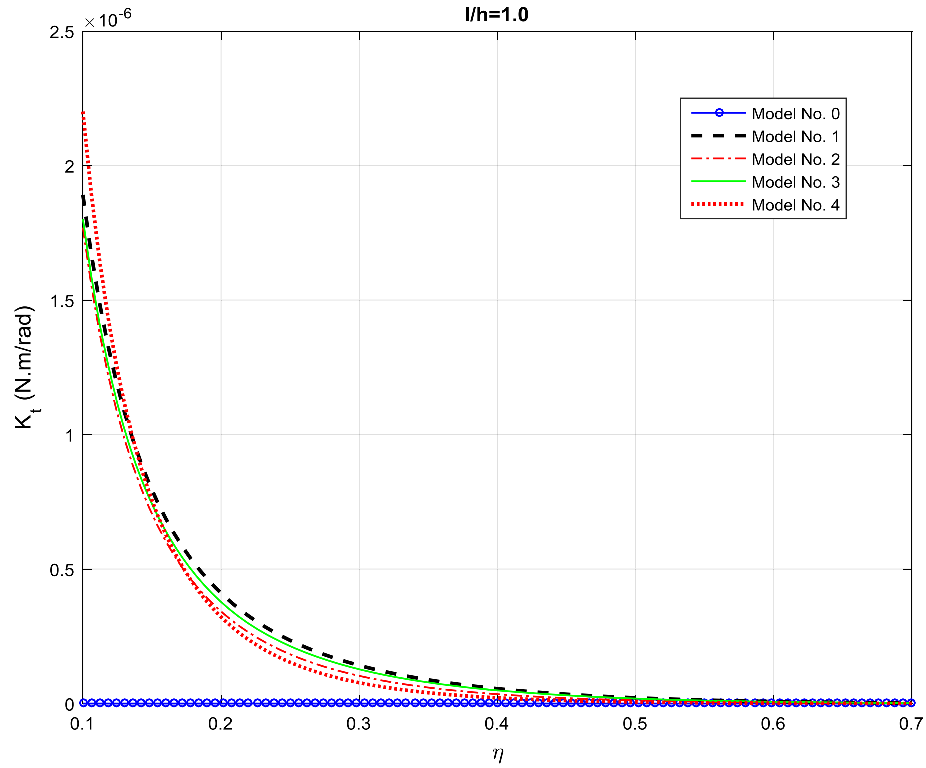


Fig. 10 Torsional spring stiffness at the crack location of the microbeam versus crack depth ratio $\eta = a/h$ for different models of crack at $\frac{l}{h} = 1$

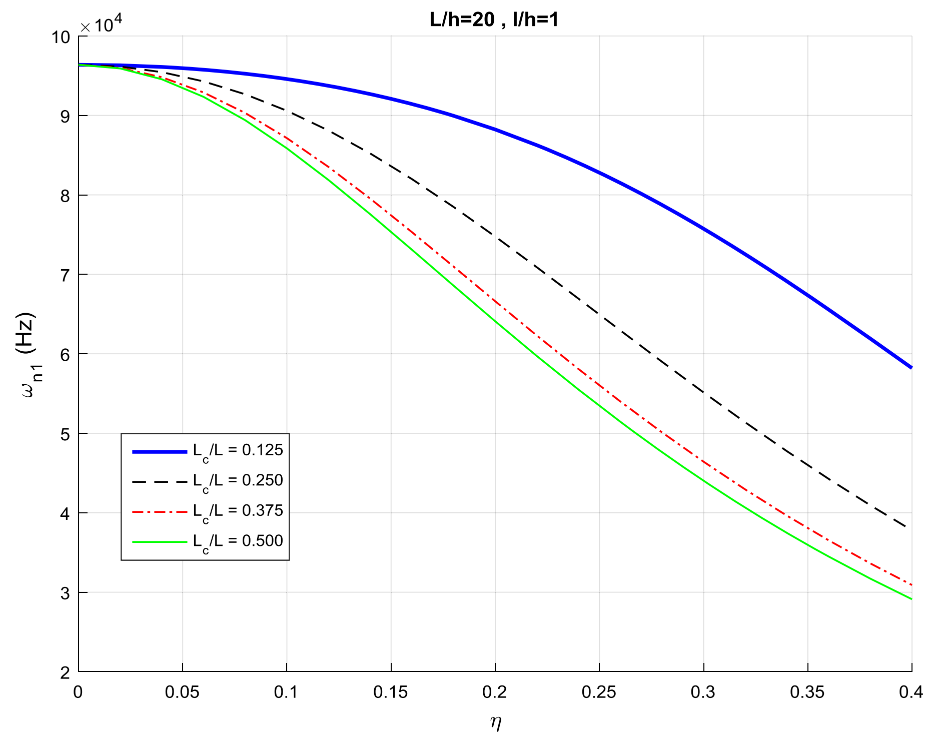


Fig. 11 Variation of fundamental natural frequency of the cracked microbeam versus crack depth ratio $\eta = a/h$ for different crack location at $\frac{l}{h} = 1$

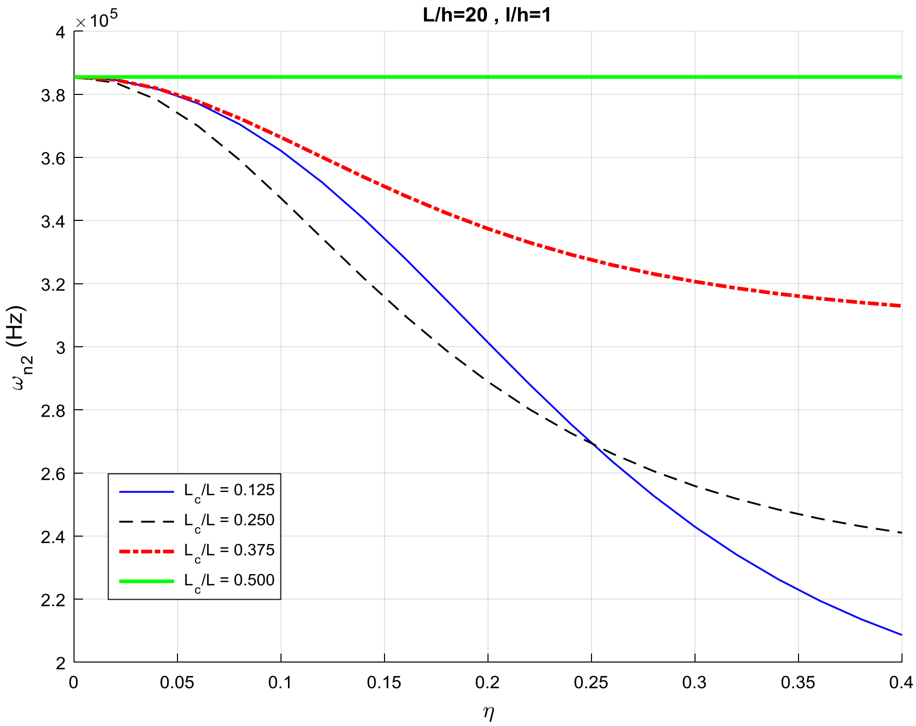


Fig. 12 Variation of second natural frequency of the cracked microbeam versus crack depth ratio $\eta = a/h$ for different crack location $\frac{L_c}{L}$ at $\frac{l}{h} = 1$

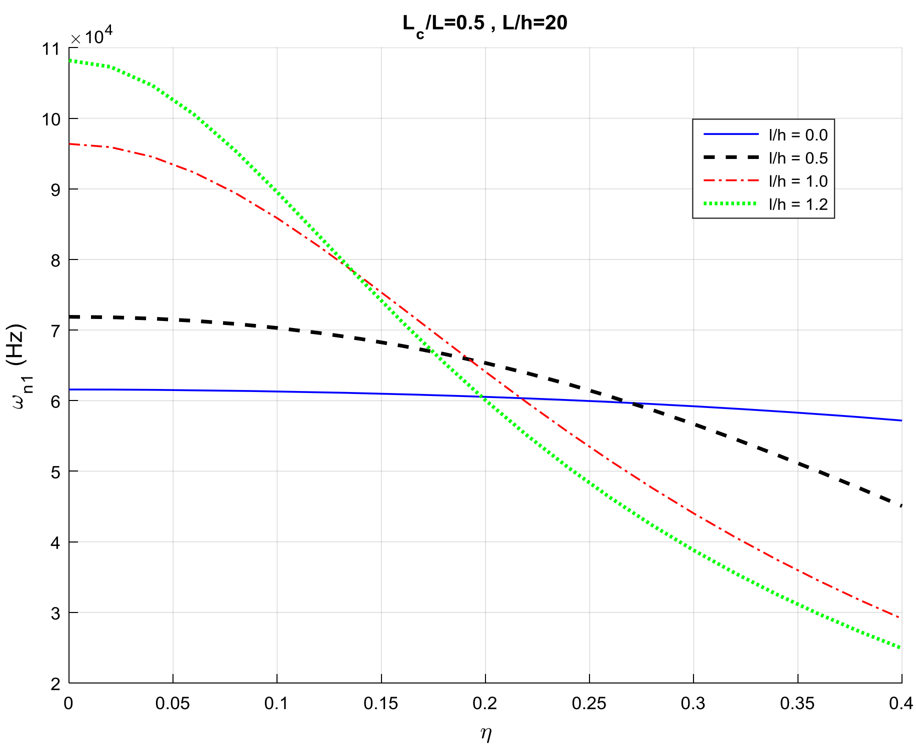


Fig. 13 Variation of fundamental natural frequency of the cracked microbeam versus crack depth ratio $\eta = a/h$ for different values of dimensionless material length scale parameter l/h at crack location $\frac{L_c}{L} = 0.5$

Fig. 14 Variation of fundamental natural frequency of the cracked microbeam versus crack location $\frac{L_c}{L}$ for different values of dimensionless material length scale parameter l/h at crack depth ratio $\eta = 0.2$

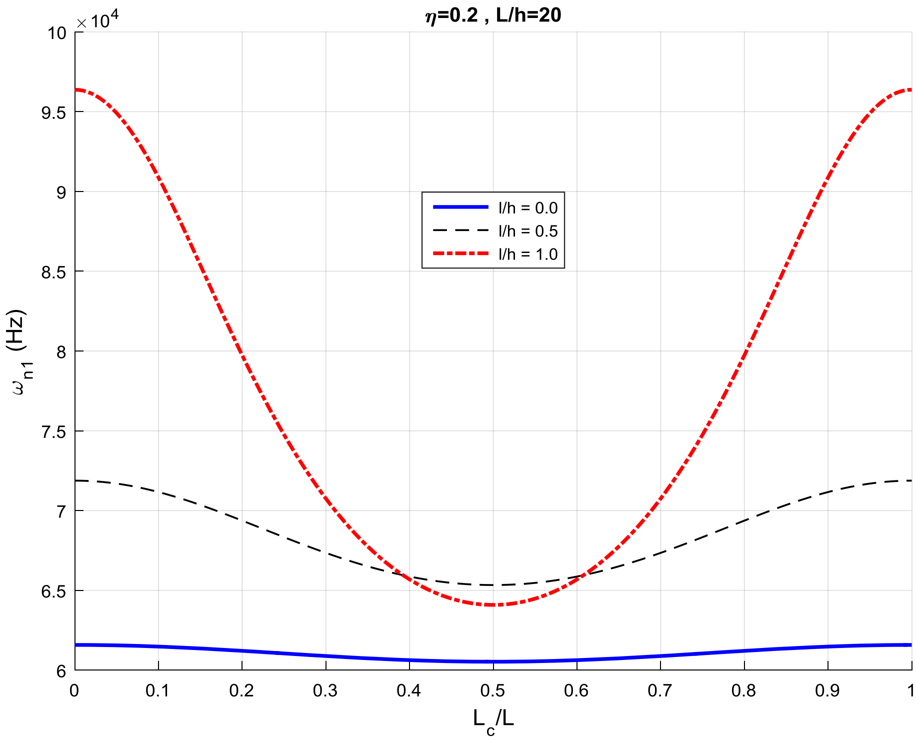


Fig. 15 Variation of second natural frequency of the cracked microbeam versus crack location $\frac{L_c}{L}$ for different values of dimensionless material length scale parameter l/h at crack depth ratio $\eta = 0.2$