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Comment on “Study of wave propagation in nanowires with surface effects by using a high-order continuum theory” by F. Song, G. L. Huang, V. K. Varadan. Acta Mech. 209, 129–139, (2010)

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1 Comment

The authors have presented an interesting paper on the wave propagation in nanowires [1]. The discussor appreciates the innovative and comprehensive work of the authors. However, after studying this paper, the discussor has found some errors and uncertainties:

1. Equations (6) and (7) should read as, respectively,

$$\begin{aligned}\varepsilon_{rr} &= \Phi_1(X,t) + 2r\Phi_2(x,t), \\ \varepsilon_{\theta\theta} &= \Phi_1(x,t) + r\Phi_2(x,t).\end{aligned}$$

Probably, these are typing errors. Therefore, the results and conclusions presented are not affected by these errors.

2. A simple dimensional analysis inspection shows that Eq. (38) is not correct. If “ L ” is an unknown dimensionless constant, Eq. (38) is correct. However, in this article, (L/a) is seen as 0.1 in numerical data for Fig. 2 (see the third line below Eq. 39). If this is a misunderstanding, what is taken for the value of “ L ” in numerical calculations? For the drawing of the reduced model curve in Fig. 2, this value must be given. Specifically, the discussor wants to learn how the curve in Fig. 2 is drawn for the reduced model.

Reference

1. Song, F., Huang, G.L., Varadan, V.K.: Study of wave propagation in nanowires with surface effects by using a high-order continuum theory. Acta Mech. **209**, 129–139 (2010)