

报告题目： 双层碳纳米管中的周向导波
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摘要： 考虑双层碳纳米管的层间范德华力,采用连续介质力学的波动理论,建立了双层碳纳米管中周向导波传播模型,研究周向导波的频散现象。通过与单层碳纳米管结果的比较表明, 双层碳纳米管中周向导波的传播表现出更为明显的频散特性,出现更多的模态干涉现象, 并发现在某些特殊频率处出现成对模态的消失与新启现象。

Guided Circumferential Waves in a Double-walled Carbon Nanotube

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Abstract: A model of the propagation of guided circumferential waves along a double-walled carbon nanotube is built by using the theory of wave propagation in continuum mechanics. The van der Waals force between the inner and outer nanotube are taken into account in the model. The dispersive curves of guided circumferential wave propagation are studied, and some dispersive characteristics are illustrated by comparing with those of single-walled carbon nanotube. In double-walled carbon nanotube, the guided circumferential waves will propagate in more dispersive manners. More interactions between neighboring wave modes may take place. Particularly, the present investigation has found that a couple of wave modes may disappear at certain frequencies. It has been found as well that a couple of wave modes disappear and another new couple of wave modes are excited at some wave numbers.