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A discussion on “The mechanism of long-distance jumping and the migration of main active areas for strong earthquakes occurred in the Chinese continent” —transverse isotropic “wounded element” is a better method

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摘要

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摘要

《地球物理学报》第55卷第1期的“用单元降刚法探索中国大陆强震远距离跳迁及主体活动区域转移”一文提出用减小剪切模量的方法模拟地震断层错动的效应,这种处理虽然可以模拟压扭性走滑断层错动时的剪应力降低,但会导致垂直于断层的正应力也剧烈变化,因此这种简单的减小弹性模量的方法并不合理.本文探讨了一种更好的方法——横向各向同性“杀伤单元”,利用该方法模拟断层滑动效应得到了较为合理的结果,与Okada解析解吻合较好,能够正确反映断层滑动时的应力变化.

关键词 有限元, 降刚, 剪切模量, 横向各向同性, 杀伤单元

Abstract:

In a paper titled “The mechanism of long-distance jumping and the migration of main active areas for strong earthquakes occurred in the Chinese continent” (Vol.55, No.1 of *Chinese J. Geophys. (Chinese Edition)*), Yang et al. proposed to simulate the effects of earthquake fault slip by reducing shear modulus of the elements in calculation. Although this method can simulate the shear stress drop of a fault under compression and shear, it will produce a significant drop of normal stress on the fault which is incorrect. In this paper, we propose a better method—transverse isotropic “wounded element”, and get a reasonable result, which is in good agreement with analytic solutions in the stress calculation as a result of fault slip.

Keywords [Finite element method](#), [Reduced element stiffness](#), [Shear modulus](#), [Transverse isotropic](#), [Wounded element](#)

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