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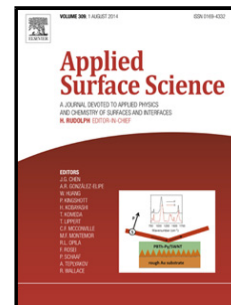
Title: Research on gears' dynamic performance influenced by gear backlash based on fractal theory

Author: Qi Chen Yunbo Ma Shouwu Huang Hua Zhai

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Highlights

- ✓ The WM function in the fractal theory is employed in this paper to express the backlash instead of the existed way of setting backlash as a fixed value or a steady random number that meets the normal distribution.
- ✓ Though the simulation and comparison of three methods: fractal method, fixed value and normal distribution, it is clearly concluded that fractal method is better than the two latter ways.
- ✓ It is advantageous to improve gear dynamics with decreasing fractal dimension, reducing time-variant stiffness and increasing damping ratio.
- ✓ The theory in this paper shows a new method to analyze the gear dynamics in respect of the changing backlash and as well as builds an indirect relationship between gear dynamic performance and tooth surface characters ,which can be utilized to improve gear dynamics characters through guiding gear surface design and manufacture in the future.

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