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Dynamic analysis of a planetary gear system with multiple nonlinear parameters

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Highlights:

1. A nonlinear dynamic model of a planetary gear system is established, considering time-varying meshing stiffness, comprehensive gear error and gear backlash.

2. The numerical simulation focuses on the effects of excitation frequency and comprehensive gear error.

3. The different parameters have different influences on the motion of the planetary gear system.

4. The results indicate the suitable coefficients should be specified so that chaotic behavior can be avoided.

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