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Correction

Correction: Research on Hopf bifurcation of vehicle air compressor system with single-pendulum TMD

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A correction on
Research on Hopf bifurcation of vehicle air compressor system with single-pendulum TMD
by Danyang Wang and Ning Chen, *Electronic Research Archive*, 2025, 33(5): 3285–3304.
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The authors would like to make the following corrections to the published paper [1].

1). Due to the originally approved abstract was inadvertently replaced with content from an unrelated manuscript as authors prepare final published versions. The error was identified after publication and affects only the abstract; all other content remains unchanged. The corrected abstract is as follows:

Abstract: Nonlinear tuned mass dampers (TMDs) are widely recognized for their superior damping performance, which stems from their broad damping bandwidth. In this study, we propose a single-pendulum TMD for application in vibration absorption within train compressors to protect critical components. However, the inherent nonlinear vibration characteristics of the TMD may undermine its damping effectiveness. To address this challenge, we develop a three-degree-of-freedom mechanical model of a train compressor integrated with a single-pendulum TMD. The equations of motion for the system are derived using the second kind of Lagrange formula. By employing the fourth-order Runge-

Kutta numerical integration method and using the excitation frequency as the bifurcation parameter, we analyze the bifurcation behavior and the transition to chaos via the Poincaré cross-section method. Our results demonstrate that the system can transition to chaos through multiple routes, including multiplicative bifurcation, Hopf bifurcation, and residual-dimension bifurcation, depending on the excitation frequency. These findings provide critical insights for the dynamic design and chaotic motion prediction of single-pendulum TMD systems, offering practical guidance to enhance their reliability and performance in real-world applications.

2). On page 3289, Eq (6) had an extra symbol accidentally added during formatting. The error was identified after publication. Deleting the symbol will not affect the research results, conclusions, or scientific validity. The corrected Eq (6) is as follows:

$$\begin{cases} R_x = \frac{1}{2} c_x \dot{x}^2 \\ R_y = \frac{1}{2} c_y (\dot{y} - \omega Y sin\omega\tau)^2 \\ R_\theta = \frac{1}{2} c_\theta \left[\left(\dot{x} + l\, cos\,\theta\, \dot{\theta} \right)^2 + \left(\dot{y} + l\, sin\,\theta\, \dot{\theta} \right)^2 \right] \\ R = R_x + R_y + R_\theta = \frac{1}{2} c_x \dot{x}^2 + \frac{1}{2} c_y (\dot{y} - \omega Y sin\omega\tau)^2 + \frac{1}{2} c_\theta [(\dot{x} + l\, cos\,\theta\, \dot{\theta})^2 + (\dot{y} + l\, sin\,\theta\, \dot{\theta})^2] \end{cases} . \quad (6)$$

The changes have no material impact on the conclusions of this article.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Conflict of interest

The authors declare there are no conflicts of interest.

References

1. D. Wang, N. Chen, Research on Hopf bifurcation of vehicle air compressor system with single-pendulum TMD, *Electron. Res. Arch.*, **33** (2025), 3285–3304. https://doi.org/10.3934/era.2025145