

- [3] ZHU H, ZHOU Y, HU Y. Displacement reconstruction from measured accelerations and accuracy control of integration based on a low-frequency attenuation algorithm [J]. *Dynamics and Earthquake Engineering*, 2020, 133: 106122.
- [4] STATHIS C S. Errors in velocities and displacements deduced from accelerographs; an approach based on the theory of error propagation[J]. *Dynamics and Earthquake Engineering*, 2008, 28: 415-420.
- [5] 方新磊,郝伟,陈宏. 基于频域滤波的加速度信号处理[J]. *仪表技术与传感器*, 2012(4): 94-96.  
FANG X L, HAO W, CHEN H. Acceleration signal processing based on frequency domain filtering [J]. *Instrument Technique and Sensor*, 2012(4): 94-96. (in Chinese)
- [6] 陈太聪,张奇. 基于频谱能量形态拟合的加速度积分方法研究[J]. *振动与冲击*, 2019, 38(13): 7-20.  
CHEN T C, ZHANG Q. Acceleration integration method based on frequency spectral energy morphological fitting [J]. *Journal of Vibration and Shock*, 2019, 38(13): 7-20. (in Chinese)
- [7] 张志,孟少平,周臻,等. 振动台试验加速度积分方法[J]. *振动、测试与诊断*, 2013, 33(4): 627-633.  
ZHANG Z, MENG S P, ZHOU Z, et al. Numerical integration method of acceleration recodes for shaking table test[J]. *Journal of Vibration, Measurement & Diagnosis*, 2013, 33(4): 627-633. (in Chinese)
- [8] LEE H S, HONG Y H, PARK H W. Design of an FIR filter for the displacement reconstruction using measured acceleration in low-frequency dominant structures [J]. *International Journal for Numerical Methods in Engineering*, 2010, 82: 403-434.
- [9] HONG Y H, LEE S G, LEE H S. Design of the FEM-FIR filter for displacement reconstruction using accelerations and displacements measured at different sampling rates [J]. *Mechanical Systems and Signal Processing*, 2013, 38: 460-481.
- [10] PARK K Y, LEE H S. Design of de-noising FEM-FIR filters for the evaluation of temporal and spatial derivatives of measured displacement in elastic solids [J]. *Mechanical Systems and Signal Processing*, 2019, 120: 524-539.
- [11] BRANDT A, BRINCKER R. Integrating time signals in frequency domain-comparison with time domain integration[J]. *Measurement*, 2014, 58: 511-519.
- [12] THONG Y K, WOOLFSON M S, CROWE J A, et al. Numerical double integration of acceleration measurements in noise[J]. *Measurement*, 2004, 36: 73-92.
- [13] 林楠. 零初值加速度积分方法及应用[D]. 大连: 大连理工大学, 2016.  
LIN N. Novel integration method acceleration based on zero initial condition and application[D]. Dalian: Dalian University of Technology, 2016. (in Chinese)
- [14] GAO S J, LIU F S, JIANG C Y. Improvement study of modal analysis for offshore structures based on reconstructed displacements [J]. *Applied Ocean Research*, 2021, 110: 102596.
- [15] 李征,房宏才,柯熙政,等. 滑动平均法在 MEMS 陀螺信号趋势项提取中的应用[J]. *电子测量与仪器学报*, 2019, 33(7): 43-49.  
LI Z, FANG H C, KE X Z, et al. Application of sliding average method to MEMS gyroscope signal trend extraction [J]. *Journal of Electronic Measurement and Instrumentation*, 2019, 33(7): 43-49. (in Chinese)
- [16] ZHENG W H, DAN D H, CHEN W, et al. Real-time dynamic displacement monitoring with double integration of acceleration based on recursive least squares method [J]. *Measurement*, 2019, 141: 460-471.

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