Conclusions

- 1. The mechanism of the polygonal wear of wheels of the high-speed train should be attributed to the excited resonance of the min/track coupling system in operation, and its root cause is the excited resonance backs bogie of the train in high-speed operation and under the extensive exception of wheel/rail, such as rail welding, normal irregularities of the track, initial fill corrugation caused by initial grinding of new rails, initial efects take by wheel processing (eccentricities of mass and roundness).
- 2. The basic condition for the poly on generatio of wheels depends on the operation speed, the excited resonant requirement and the current perimeter or diameter of wheel. If the perimeter of wheel can be approximately divided by the wavelength corresponding to the excited esonant frequency of the bogie, the polygonal wear easily reperates and revelops quickly. The wavelength is obtained by dividing the operation peed with the frequency of the excited resonance.
- 3. Changing the operation speed can easily break the basic condition for the polygon generation is which and effectively suppress the growth of the polygonal wear. But it is not easy to change the resonant frequencies by changing the structure parameters of the bogie or the diameters of the wheels due to the decrease the diameters with the mileage increase. Also the diameters of the wheels are strictly under control in operation and maintenance of trains.

