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## **EXPERIMENTAL RESEARCH ON AN ENERGY-SAVING MAGLEV TRAIN**

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### **Abstract**

The permanent magnet EDS train has been considered to be one of the most promising urban transportation vehicles due to its particular characteristics: simple configurations, low energy consumption, low noise, and suitable for high speed conditions. In order to study the characteristics of permanent magnet Electrodynamic Suspension (EDS) system, an experimental mechanism was established in this paper. The optimization of Halbach magnet array has been carried out and appropriate track for the EDS experimental mechanism has been established. The characteristics of the permanent-magnet EDS system have been achieved by static and dynamic experiments. As a conclusion, the permanent magnet EDS system is appropriate to apply on high speed field. Moreover, experiments validate that some damping should be introduced into the system to obtain better stability performance because the EDS system is inherently instable.

*Key words:* electrodynamic suspension, energy-saving, Halbach array, permanent magnet, track

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