**MT29 Abstracts and Technical Program** 



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## Wed-Mo-Po.10-08: Numerical studies on the dynamic responses of multiple levitated High-Temperature superconductors by a vector potential method

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In this paper, we present a 2-D numerical model based on a vector potential method and nonlinear E-J relationship to study the dynamic responses of multiple bulks of high-temperature superconductor(HTSC) levitated above different typical permanent magnetic guideway (PMG). Different from the existing related models and results of this subject, the coupling effects of different bulks are taken into account. The levitation forces are calculated by a finite element program of home-made and then the vertical motion of the levitated HTS subject to external disturbance is characterized by a second-order dynamic equation which couples the electromagnetic model via the levitation force. We study the coupling effects on the vertical dynamic characteristics of the HTSC levitated above typical Halbach-derived PMG. These comparative results would better reveal the dynamic response of the superconducting Maglev system.

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