



Contribution ID: 1473

Type: **Poster Presentation**

Mon-Mo-Po1.09-05 [101]: Levitation characteristics of a magnetic bearing with a superconducting stator from CC tapes

Monday 23 September 2019 09:15 (2 hours)

The levitation properties of permanent magnet-superconductor systems have been studied for a long time. Recently it has been demonstrated extensive possibilities of application of stacks, slabs and windings from HTSC tapes for levitation systems.

In this work a design of a superconducting passive magnetic levitation bearing on the base of HTSC flexible tapes is proposed and implemented. The bearing consists of a cylindrical stator with a superconducting winding and a concentric rotor. The rotor consists of a set of permanent magnets located around the stator in three layers. Different configurations of superconducting windings with different numbers of pancakes and different numbers of tape layers in one pancake are implemented. The values of the horizontal and vertical components of the levitation force are measured. A comparison is made of the obtained dependences with the values of the levitation force of stacks of HTSC tapes with different numbers of tapes over the line of magnets, similar to a rotor.

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Session Classification: Mon-Mo-Po1.09 - Levitation and Magnetic Bearings I