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Rail magnets arrangement for improving stability of a superconducting transport system

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The stability of a levitation transport system using a bulk superconductor levitated above a permanent magnet rail has been studied. We investigated the inclination of the superconducting shuttle to improve the stability of the superconducting levitation transport system. The roll angle of the superconductor shuttle was estimated by measuring the magnetic force acting on each part of the levitating superconductor. The condition in which the roll angle of the superconductor shuttle for the lateral displacement becomes the stable inclination was searched. The transport stability of the levitation superconductor was improved by optimized the magnetization direction and the width of the magnet rail.

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