

Abstract Submitted
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Magnetic Levitation Force Measurement System at Any Low Temperatures From 20K To 300K¹ SUKRU CELIK, Sinop University, Faculty of Engineering and Architecture, Department of Engineering Systems, Sinop, Turkey, S. BARIS GUNER, ELVAN COSKUN, Recep Tayyip Erdogan University, Department of Physics, Faculty of Arts and Sciences, Rize, Turkey — Most of the magnetic levitation force measurements in previous studies were performed at liquid nitrogen temperatures. For the levitation force of MgB₂ and iron based superconducting samples, magnetic levitation force measurement system is needed. In this study, magnetic levitation force measurement system was designed. In this system, beside vertical force versus vertical motion, lateral and vertical force versus lateral motion measurements, the vertical force versus temperature at the fixed distance between permanent magnet PM – superconducting sample SS and the vertical force versus time measurements were performed at any temperatures from 20 K to 300 K. Thanks to these measurements, the temperature dependence, time dependence, and the distance (magnetic field) and temperature dependences of SS can be investigated. On the other hand, the magnetic stiffness MS measurements can be performed in this system. Using the measurement of MS at different temperature in the range, MS dependence on temperature can be investigated. These measurements at any temperatures in the range help to the superconductivity properties to be characterized.

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