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## Accurate Control the DC Output Current of the Linear-Motor Flux Pump Based on the Four Quadrant Method

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Superconducting materials have a high current-carrying capacity and direct current(DC) lossless characteristics. The linear-motor type flux pump is a wireless DC power source for high-temperature superconducting coils. In the control process of outputting DC current to the superconductor coil. Except for an uncontrollable parameter  $\lambda$ , which length is depended on the length of the teeth and slots of the phase windings, there are three controllable parameters such as DC-bias field, amplitude of the AC travelling wave, and the field frequency (travelling speed). By changing those parameters, we change the applied fields and its DC output current into superconducting coils. In this paper, we will use a LabView program to control three controllable parameters. By changing the direction of DC bias magnetic field and the magnitude of DC bias magnetic field, AC wave amplitude and magnetic field frequency, the fast response of the system and the high precision control of the output current are realized. The error between the actual output current and the expected output current is greatly reduced and the output current can reach the specified value in a short time.

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