

## Development of Energy Recovery Power Supply for High Efficiency klystron

In response to the low energy utilization efficiency of the RF power source system in a large particle accelerator, a high-efficiency klystron based on a multi-stage depressed collector is designed. The aim is to reduce the thermal losses of the klystron collector, thereby enhancing the overall energy efficiency of the RF power source system. This article presents the development of an energy recovery power supply for the high-efficiency klystron for verifying the feasibility of the energy recovery scheme for the multi-stage depressed collector of a high-efficiency klystron. The article further analyzes the principles and key technologies of the depressed collector klystron and high-voltage power supply. The main focus is the technical prospects of the energy-efficient validation experimental apparatus, the selection of voltages for different stages of the klystron, the design approach for the klystron cathode high-voltage power supply, and the klystron depressed collector power supply.

**Primary author:** LI, Fei (IHEP)

**Co-authors:** ZHOU, Zusheng (IHEP); Mr LIU, Yu (IHEP); Mr XIAO, Ouzheng (IHEP); Mr HE, Dayong (IHEP); Mr LIU, Jindong (IHEP); Mr GAN, Nan (IHEP); Mr ABID, Aleem (IHEP)

**Presenter:** LI, Fei (IHEP)

**Session Classification:** Accelerator

**Track Classification:** CIPC: 04: Technology for CEPC