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Preliminary design of energy recovery scheme for high-power klystron

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Based on the high efficiency klystron scheme of circular electron positron collider (CEPC), the depressed collector design is proposed to improve the overall efficiency of RF power source. The difficulty of the research is that the velocity of electrons entering the klystron collector is scattered, and it is difficult to use the depressed collector to sort the velocity of electrons. Based on the CEPC high efficiency klystron design, this paper will carry out a detailed theoretical analysis of the depressed collecter and determine the basic design scheme. In order to verify the klystron energy recovery scheme, an energy recovery verification device is designed.

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