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## 高効率クライストロン (1) [Introduction to High-Efficiency Klystrons(1)]

*Tuesday, 10 September 2024 16:30 (1 hour)*

The klystron, which provides RF power to large-scale particle accelerators, is one of the most power-consuming devices. Therefore, high-efficiency klystrons are in strong demand. Previous OHO lectures have detailed the theories and technologies of the klystron. This lecture will primarily focus on the efficiency of a klystron, discussing the ballistic theory of the klystron RF section. Through these discussions, we will define efficiency and highlight concepts critical to high-efficiency klystron design. Code for plotting Applegate diagrams based on equations will be provided. Additionally, simulation tools for designing klystrons will be introduced. Various new bunching methods aimed at achieving higher klystron efficiency will be described in detail, with some examples of input data for a one-dimensional simulation tool to help intuitively understand these new technologies. The advantage of multi-beam klystrons in achieving high efficiency will also be discussed. In the final part of the lecture, parameters of existing high-efficiency klystrons will be listed in detail. Ongoing global research activities, including new designs and test results, will be introduced one by one.

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