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High-voltage feed design for electrostatic potential depression in an RF accelerator

Monday 26 August 2024 16:00 (2 hours)

Space-borne accelerator technologies suffer from significant electron beam loss during beam acceleration and excessive energy spread of the output beam. LANL is proposing a deployable and compact solution using electrostatic potential depression (EPD) to achieve higher bunching, lower beam loss, and smaller energy spread. This buncher system involves the use of three EPD sections, each electrically insulated from the bunching cavities and with a separate high voltage power supply, whose leads will have to reach through vacuum and the insulator to bias the specific section of the buncher. This presents considerable challenges due to the triple junction problem and the presence of parasitic radio frequency fields leaking through the insulating material.

Footnotes

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