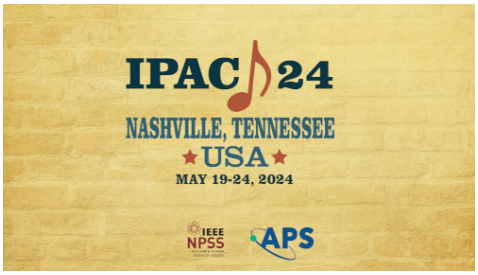


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# Optimization of a 2.6-cell normal-conducting S-band photocathode RF gun

*Wednesday, 22 May 2024 16:00 (2 hours)*

A new S-band photocathode RF gun proposed for ultrafast electron diffraction (UED) has been designed and optimized. The 2.6 cell electron gun works at π-mode and the operating frequency is 2.856 GHz. The peak electric field on the cathode is 56 MV/m and the field in the following cells are optimized to reduce transverse emittance. The pulsed RF power loss is 2.5 MW and the final kinetic energy of the electron beam is 3.5 MeV. The RF gun works at high duty factor and the average power loss reaches 5 kW. The cooling channel has been carefully designed to minimize the temperature rise inside the cavity.

## Footnotes

## Funding Agency

## Paper preparation format

## Region represented

Asia

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