

## Channeling 2018



ID contributo: 94

Tipo: Poster

# Electrostatic Cumulation of High-Current Electron Beams for Terahertz Sources

*martedì 25 settembre 2018 18:40 (1 ora)*

The electrostatic cumulation of current density in relativistic vacuum diodes with ring-type cathodes is described theoretically and confirmed experimentally. The distinctive feature of the suggested cumulation mechanism is a very low energy spread of electrons. As a result of electrostatic cumulation, a thin relativistic electron beam with a current density of 1 kA/mm<sup>2</sup> can be formed. This quantity exceeds a typical current density in high-current Cherenkov sources for an order of magnitude. Such a beam can be used as an active medium in high-power terahertz sources.

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**Classifica Sessioni:** PS2 - Poster session