



Contribution ID: 337

Type: **not specified**

High-Gradient, Millimeter Wave Accelerating Structure

Friday, August 7, 2015 5:24 PM (18 minutes)

The millimeter wave all-metallic accelerating structure, aimed to provide more than 100 MeV/m gradient and fed by feeding RF pulses of 20-30 ns duration, is proposed. The structure is based on a waveguide with small helical corrugation. Each section of 10-20 wavelengths long has big circular cross-section aperture comparable with wavelength. Because short wavelength structures are expected to be critical to wakefields excitation and emittance growth, we suggest to combine in one structure properties of a linear accelerator and a cooling damping ring simultaneously. It provides acceleration of straight on-axis beam as well as cooling of this beam due to the synchrotron radiation of particles in strong non-synchronous transverse fields. These properties are provided by specific slow eigen mode which consists of two partial waves, TM₀₁ and TM₁₁. Simulations show that shunt impedance can be as high as 100 MOhm/m. Results of the first low-power tests with 30 GHz accelerating section are analyzed.

Oral or Poster Presentation

Oral

Primary author: Dr KUZIKOV, Sergey (Institute of Applied Physics)**Co-authors:** Dr VIKHAREV, Aleksandr (Institute of Applied Physics); Dr PESKOV, Nikolay (Institute of Applied Physics)**Presenter:** Dr KUZIKOV, Sergey (Institute of Applied Physics)**Session Classification:** Accelerators, Detectors, Computing**Track Classification:** Accelerators