Nuclear Inst. and Methods in Physics Research, A 875 (2017) 80–86

Contents lists available at ScienceDirect

Nuclear Inst. and Methods in Physics Research, A

journal homepage: www.elsevier.com/locate/nima

Quasi-monoenergetic ultrashort microbunch electron source

Levi Schächter [a,*], Wayne D. Kimura [b]

[a] Department of Electrical Engineering, Technion – Israel Institute of Technology, Haifa 32000, Israel
[b] STI Optronics, Inc., 2647 151st Place NE, Redmond, WA 98052, USA

ARTICLE INFO

Keywords:
Electron sources

ABSTRACT

By combining static electric and laser fields for generation of field-emitted electrons, it is possible to generate a quasi-monoenergetic train of electron microbunches by controlling the anode–cathode spacing such that the time of flight of the electrons becomes independent of the laser field. Such quasi-monoenergetic microbunches with pulse durations that are a fraction of the laser wavelength would be ideal for radiation sources as well as compact accelerators.