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Author: Chittaranjan Nayak Ardhendu Saha

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Photonic Nanojet Produce from a Rectangular Grooves based finite length Diffraction Grating

Chittaranjan Nayak, Ardhendu Saha*

Department of Electrical engineering, National Institute of Technology Agartala, 799046, India

*E-mail addresses: arsagtwave@gmail.com, arsagtwave@yahoo.com

Abstract: The aim of this manuscript focus on the effect of the number of grating period on the performance of the photonic jet produce from a rectangular grooves based finite length finite diffraction grating. The computational analysis is carried out using three dimensional finite difference time domain method. From simulation result it is evident that, propagation length and Full width half maxima of the PNJ produce from the central period of the FRGG decreases with increase in number of grating period of the proposed rectangular grooves based finite length grating. Whereas in case of maximum possible length (MPL) which appears due to the increase in grating period, a reverse situation was observed. Therefore, PNJs generated from proposed FRGG having below defection limit can be used for high resolution microscopy.

Keywords: Polydimethylsiloxane; Photonic nanojet, finite length finite diffraction grating, maximum possible length.

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