

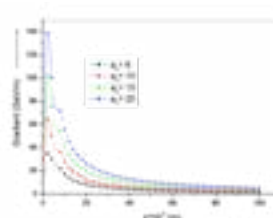
## Electron acceleration by *Chirped axicon Gaussian laser in vacuum*

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Electron acceleration by Frequency chirped radially polarized (RP) axicon Gaussian laser pulse in vacuum in the presence of wiggler magnetic field is studied. A strong longitudinal electric field is produced by axicon Gaussian laser pulse which is crucial and responsible for direct electron acceleration in vacuum. Linear frequency chirp enhances the interaction time between laser and electron however, the applied wiggler magnetic field helps in improving the strength of ponderomotive force so that the electron traversing in the accelerating phase up to longer distances. It is observed that an electron with initial energy of few MeV accelerates up to GeV energy with optimized laser and magnetic field parameters. A significant enhancement in the electron energy gain is seen in the presence of wiggler magnetic field.



**Figure 1:** Acceleration gradient as a function of normalized distance  $Z'$  with intensity parameter  $a_0=6, 10, 15$  and  $20$  with the optimum values of frequency chirp parameter ( $\alpha$  symbol) and magnetic field parameter  $b_0$ . The other parameters are  $e=0.8$ , and  $r_0=31$ .

### Biography

Niti Kant is Associate Professor at Physics Department at Lovely Professional University, Phagwara, Punjab, India. He received Ph.D. degree in Laser-Plasma Interaction from IIT Delhi. His research is focused on the areas of self-focusing of lasers in plasmas, laser-plasma based accelerators and THz radiation. He was Postdoc Fellow at POSTECH, South Korea from Dec. 2005 to Feb. 2007. He has supervised 04 Ph.D., 11 M.Sc. and 10 M.Phil students and supervising 3 Ph.D. & 2 M.Sc. students. He has published more than 45 research papers in international refereed journals and participated various national/international conferences.

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