



Contribution ID: 1281 Contribution code: MOPR54

Type: **Poster Presentation**

## Electron acceleration by Laguerre-Gaussian pulse in relativistic-ponderomotive regime of magnetoplasma

*Monday, 20 May 2024 16:00 (2 hours)*

In present paper, the coupled effect of spatio-temporal variation of the laser pulse propagating inside magnetoplasma on electron acceleration have been investigated theoretically. The variation in the dielectric properties under the combined effect of relativistic and ponderomotive non-linearity have been taken into account. Two coupled second order non-linear differential equations determining variation in both spatial and temporal widths have been obtained using moment theory approach. The propagation of laser pulse excites an electron plasma wave, which behaves as a wakefield and accelerates the trapped electrons to high energy values. The laser dynamics and electron acceleration have been investigated for different laser and plasma parameters. Furthermore, the effect of externally applied axial magnetic field has also been observed. The results are interesting and are useful for scientists and researchers working in the the field of wakefield acceleration.

### Footnotes

### Funding Agency

### Paper preparation format

LaTeX

### Region represented

Asia

**Primary author:** SINGH, Arvinder (National Institute of Technology Jalandhar)

**Co-author:** KAD, Proxy (National Institute of Technology Jalandhar)

**Presenter:** SINGH, Arvinder (National Institute of Technology Jalandhar)

**Session Classification:** Monday Poster Session

**Track Classification:** MC3: Novel Particle Sources and Acceleration Techniques: MC3.A22 Plasma Wakefield Acceleration