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## Particle injection and acceleration in laser wakefield generated via propagation of two laser pulses

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Interaction of intense laser pulses with plasma finds one of the important applications in acceleration of charged particles. The pioneering work of Tajima and Dawson [1] has given great impetus to the idea of electron acceleration using wakefield generated by intense laser pulses. Acceleration of electrons by enhanced wakefield generated by chirped laser pulse propagating together in plasma has been studied [3]. Present work deals with the comparative study of acceleration of particle via wakefield generated by two co- and counter propagating laser pulses in homogeneous plasma. This study reveals that the maximum energy gained by test electrons is enhanced and depends on the relative polarization and frequency difference. Phase space analysis shows that a test electron of lower energy, injected behind the wakefield, can be trapped and accelerated to higher energy.

### Footnotes

- [1] T. Tajima and J. M. Dawson, Phys. Rev. Lett. 43, 267 (1979).
- [2] E. Esarey, P. Sprangle, J. Krall and A. Ting, IEEE Trans. Plasma Sci., 24, 252 (1996).
- [3] S Singh, D. Mishra, B. Kumar and P. Jha, Phys. Scr. 98 075504 (2023).

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**Primary author:** SINGH, Saumya (Lucknow University)

**Presenter:** SINGH, Saumya (Lucknow University)

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