

Laser Acceleration and its Future

Jour exceptionnel

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Taking judicious advantage of the relativistic dynamics of plasma under intense laser fields, Laser Wakefield Acceleration (LWFA) is capable of boosting energies of electrons to tens or hundreds of gigaelectron-volts (GeV), perhaps to a TeV in a compact fashion.

Recent experiments have demonstrated the electron acceleration to the GeV range. We review the recent progress, project out a path toward high energies, and identify the necessary technical elements for the future accelerators, such as a collider based on a laser. Since the wavelength of a laser is some four orders of magnitude shorter than that of the conventional RF driver of an accelerator, the LWFA accelerating gradient is also some four orders of magnitude greater than the latter's, while the transverse emittance is much smaller than the latter's.

On the other hand, the spatio-temporal compactification and the energy density magnification by many orders poses us a challenge to keep the intense laser acceleration process under finesse control.

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CEA/Saclay - l'Orme des Merisiers
Amphi Claude Bloch, Bât. 774

11 h 00

Accueil café 10 h 45