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### **Laser Plasma Accelerators**

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I will present a review of research activity on developing laser plasma accelerators. This review will provide an opportunity to show the incredible evolution of this subject, which has in record time, allowed physicists to produce from compact laser system, an high quality electrons beam in the GeV level. I will show the scientific path that led us to produce today electrons beam by exploring difference laser plasma interaction regimes such as the Self Modulated Laser Wakefield regime, the Forced Laser Wakefield regime, the “Bubble/Blow-out” regime, and more recently the colliding laser pulses scheme regime that permits to produce a stable and high quality electron beam with relative energy spread of 1%, a duration of less than 2fs, a tunable electron energy from 50 to a few of hundred MeV, a tunable charge from the 10-100 pC, and with a peak current in the few kA range. Finally, I will show some examples of applications we recently identified in medicine (radiotherapy), in biology, in chemistry (radiolysis), in physics for materials science (gamma radiography), and of course for the development of physics accelerators for high energy physics for long term project, and for mid term project for the design of compact free electron laser.