

A new quasi monoenergetic ultra short and highly charged electron beam of interest for high energy femtochemistry

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We report on recent improvements of the electron beam quality produced by ultrashort, high repetition rate laser systems in a new regime called “bullet regime”. Depending on the gas density, the electron spectra can be tuned to a quasi mono energetic (1) or maxwellian (2) shape with energies extending up to 200 MeV in both cases. The electron beam is very collimated (few mrad) and contains a total charge about a few nC per shot. These results are extremely encouraging for applications. The example of two applications will be given for ultra fast chemistry (3) and for non destructive dense material inspection (4).

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