

Laser Pulse Shaping for Multi-Bunches Photoinjectors

Monday, 3 June 2013 19:30 (30 minutes)

Plasma Wake Field Accelerators need electrons in a train of ps or sub-ps spaced multi-bunches (Muggli). THz sources (Shen) and pump-probe experiments (Zewail) are also interested in ps-spaced electron bunches. Main schemes used for laser multi-bunch generation involve birefringent crystals, interference of two delayed and stretched pulses or the use of a Dazzler and a 4f system with an amplitude mask in the Fourier plane (Boscolo). We are testing two schemes in Sparc_lab facility: one based on birefringent crystals (Petrillo) and the other is a new idea based on retardation of different spectral components of the laser pulse using quartz plates in the Fourier plane of a 4f system.

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Primary author: VILLA, Fabio (INFN - LNF)

Co-authors: BACCI, Alberto Luigi (MI); Dr PETRALIA, Alberto (ENEA Frascati); CIANCHI, Alessandro (ROMA2;LNF); DRAGO, Alessandro (LNF); GHIGO, Andrea (LNF); MOSTACCI, Andrea (ROMA1;LNF); ROSSI, Andrea Renato (MI); MARCHETTI, Barbara (INFN); SPATARO, Bruno (LNF); RONSIVALLE, C. (ENEA - Frascati); VACCAREZZA, Cristina (LNF); ALESINI, David (LNF); DI GIOVENALE, Domenico (LNF); PACE, Elisabetta (LNF); CHIADRONI, Enrica (LNF); Dr CIOCCI, Franco (ENEA); DI PIRRO, Giampiero (LNF); GATTI, Giancarlo (LNF); Dr RAU, Julietta (Istituto di Struttura della Materia - CNR); GIANNESI, Luca (ENEA & ST); SERAFINI, Luca (MI); PALUMBO, Luigi (ROMA1); ARTIOLI, Marcello (ENEA - Frascati); BELLAVEGLIA, Marco (LNF); FERRARIO, Massimo (LNF); MIGLIORATI, Mauro (Università degli Studi di Roma "La Sapienza" and INFN - Roma 1); CASTELLANO, Michele (LNF); ANTICI, Patrizio (LNF); Prof. MUSUMECI, Pietro (UCLA); POMPILI, Riccardo (LNF); BONI, Roberto (LNF); CIALDI, Simone (Università degli Studi di Milano and INFN-Milano); PETRILLO, Vittoria (MI); Dr SABIA, elio (ENEA Frascati); Prof. DATTOLI, giuseppe (ENEA)

Presenter: VILLA, Fabio (INFN - LNF)

Session Classification: Wine and Poster Session

Track Classification: Wine and Poster Session