20. Title: Laser comb with velocity bunching: Preliminary results at SPARC

Author: Ferrario, M; Alesini, D; Bacci, A; Bellaveglia, M; Boni, R; Boscolo, M; Calvani, P; Castellano, M; Chiadroni, E; Cianchi, A; Cultrera, L; Di Pirro, G; Ficcadenti, L; Filippetto, D; Gallo, A; Gatti, G; Giannessi, L; Labat, M; Lupi, S; Marchetti, B; Marrelli, C; Migliorati, M; Mostacci, A; Nicoletti, D; Pace, E; Palumbo, L; Petrillo, V; Quattromini, M; Ronsivalle, C; Rossi, AR; Rosenzweig, J; Serafini, L; Serluca, M; Spataro, B; Tomizawa, H ; Vaccarezza, C; Vicario, C

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Abstract: A new technique, named "laser comb", was tested during the last SPARC run. It is able to produce electron pulse trains with a charge of some hundreds pC, a repetition rate of some terahertz, and a sub-picosecond length. This technique is based on the velocity bunching configuration of the SPARC injector. It can be useful to drive pump and probe free-electron laser experiments, to generate coherent excitation of plasma waves in plasma accelerators, and to produce narrow band terahertz radiation. In this paper, we describe the experimental results achieved so far and provide a comparison with simulations.