Abstract Submitted
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A Subnanosecond Ion Source for μm-focused Ion Beams C. HÖHR[1], D. FISCHER, R. MOSHAMMER, A. DORN, J. ULLRICH, Max-Planck-Institut fuer Kernphysik, Heidelberg, Germany — A new, compact design of an ion source delivers ns-pulsed ion beams with low emittance, which can be focused to μm size. By using a high-power femtosecond (25 fs) laser pulse focused into a 10^{-6} mbar region, ions at very low temperatures are produced in the small focal volume (5 μm diameter by 20 μm length) through the simultaneous absorption of a high number of infrared photons. These ions are born in a cold environment and not in a hot plasma, and consequently have temperatures well below 10 K. The generated ion pulse (up to several thousand ions per bunch) is extracted from the source volume with ion optics that have been carefully tailored through simulations. Externally triggered, its subnanosecond duration and even smaller time jitter allows it to be superimposed with other pulses.

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