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Erratum: “Adiabatic matching of particle bunches in a plasma-based accelerator in the presence of ion motion” [Physics of Plasmas 28, 053102 (2021)]

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We would like to correct an error affecting the horizontal scale of panels (c) and (d) of Fig. 4 in Ref. 1. A scale factor of k_p was neglected when generating the plots. The correct figure is shown below. The authors would like to thank Yujian Zhao for pointing out this issue.

We would also like to correct a typo introduced during the preparation of the proofs and affecting Eq. (25), the correct equation reads

$$\frac{\varepsilon_x}{\varepsilon_{x,0}} \simeq 1 + \frac{1}{8} \frac{\gamma}{\gamma_i} \left(\overline{\lambda_i^2} - \overline{\lambda_i}^2 \right) \quad (25)$$

$$\simeq 1 + \frac{1}{8} \left(1 + \frac{\gamma'}{\gamma_i} z \right) \left(\overline{\lambda_i^2} - \overline{\lambda_i}^2 \right).$$

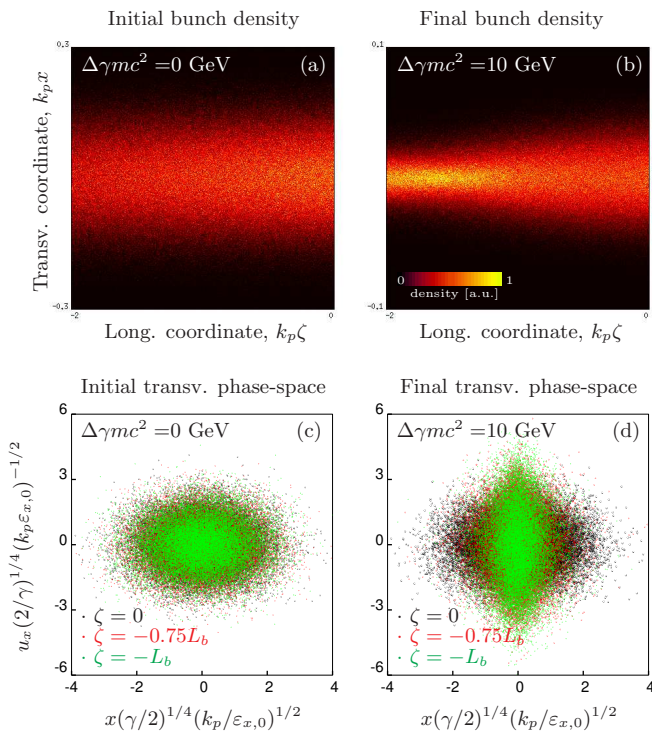


FIG. 4. Witness bunch density distribution at injection ($\gamma_i mc^2 = 50$ MeV, $\Delta\gamma mc^2 = 0$ GeV) (a), and after a $\Delta\gamma mc^2 = 10$ GeV energy gain with adiabatic matching (b). Transverse phase-space, (x, u_x) , at injection (c) and after a 10 GeV energy gain (d). In order to directly compare phase spaces obtained at different energies particle positions and momenta have been rescaled with $(2/\gamma)^{1/4}(\varepsilon_{x,0}/k_p)^{1/2}$ and $(\gamma/2)^{1/4}(k_p\varepsilon_{x,0})^{1/2}$, respectively. For clarity, only particles belonging to slices at the head ($\zeta = 0$, black dots), mid-rear section ($\zeta = -0.75 \cdot L_b$, red dots), and tail ($\zeta = -L_b$, green dots) of the bunch have been plotted.

All the conclusions of the paper are unaffected.

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