Erratum: Some basic features of the beam emittance
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Equation (13) is incorrect. It should be

$$\varepsilon_{\text{rms}} = \frac{1}{\bar{p}_z} \sqrt{\langle x^2 \rangle \langle p_x^2 \rangle - \langle x p_x \rangle^2}. \quad (13)$$

Some readers have been confused by Eq. (16). The two steps of the equation are as follows:

$$\langle x'^2 \rangle = \frac{1}{n} \sum \frac{p_x^2}{p_z^2},$$

where for simplicity it is assumed that the mean x' is zero. See for comparison Eq. (12) and the definition of x' in the introduction. The second step requires one to assume that px and pz are statistically independent:

$$\frac{1}{n} \sum \frac{p_x^2}{p_z^2} = \frac{1}{n^2} \sum p_x^2 \sum \frac{1}{p_z^2}.$$