

# Wakefields of sliced bunch

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Radius tube -  $b = 10 * 10^{-3} m$

Conductivity wall -  $\sigma = 58 * 10^6 om^{-1}m^{-1}$

$$w^\delta(s) = -\frac{4}{\pi \epsilon_0 b^2} \left( \frac{1}{3} * e^{-\frac{s}{s_0}} \cos \sqrt{3} \frac{s}{s_0} - \frac{\sqrt{2}}{\pi} \int_0^\infty \frac{x^2 e^{-x^2 * \frac{s}{s_0}}}{x^6 + 8} dx \right)$$

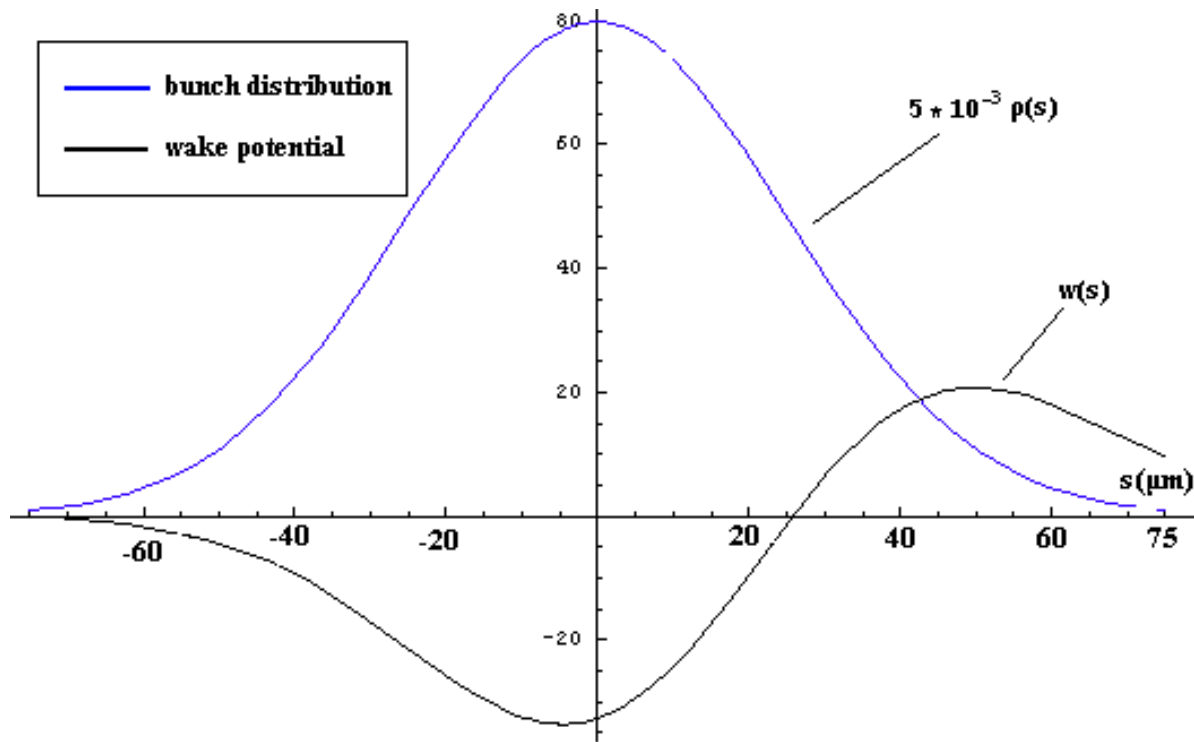
$$s_0 = \left( \frac{2cb^2 \epsilon_0}{\sigma} \right)^{\frac{1}{3}}$$

$$c = 3 * 10^8 m$$

$$\epsilon_0 = 8.8542 * 10^{-12} Fm^{-1}$$

$$w^\rho(s) = \int_{-\infty}^{\infty} w^\delta(s - s') \rho(s') ds'$$

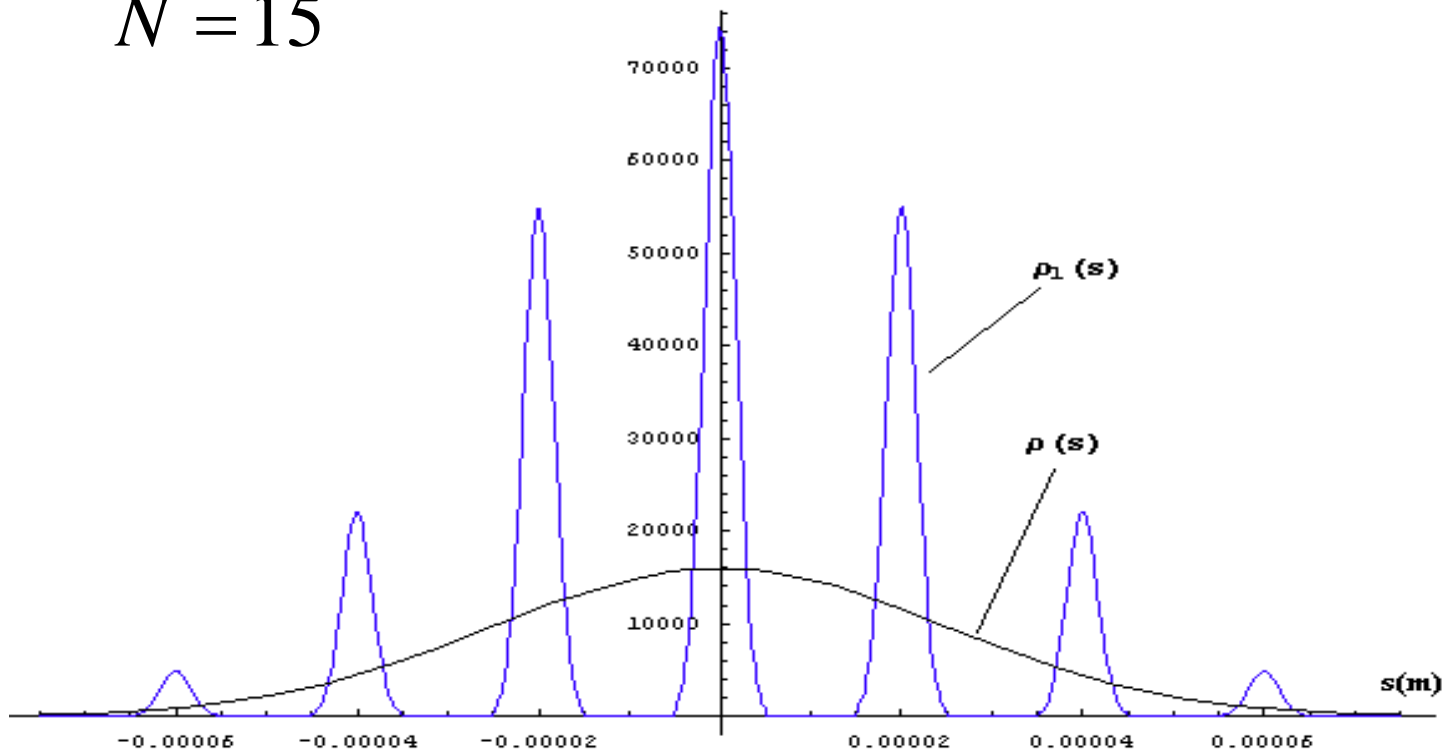
$$\sigma_z = 25 \mu\text{m} \quad \rho(z) = \frac{1}{\sqrt{2\pi}\sigma_z} e^{-\frac{z^2}{2\sigma_z^2}}$$



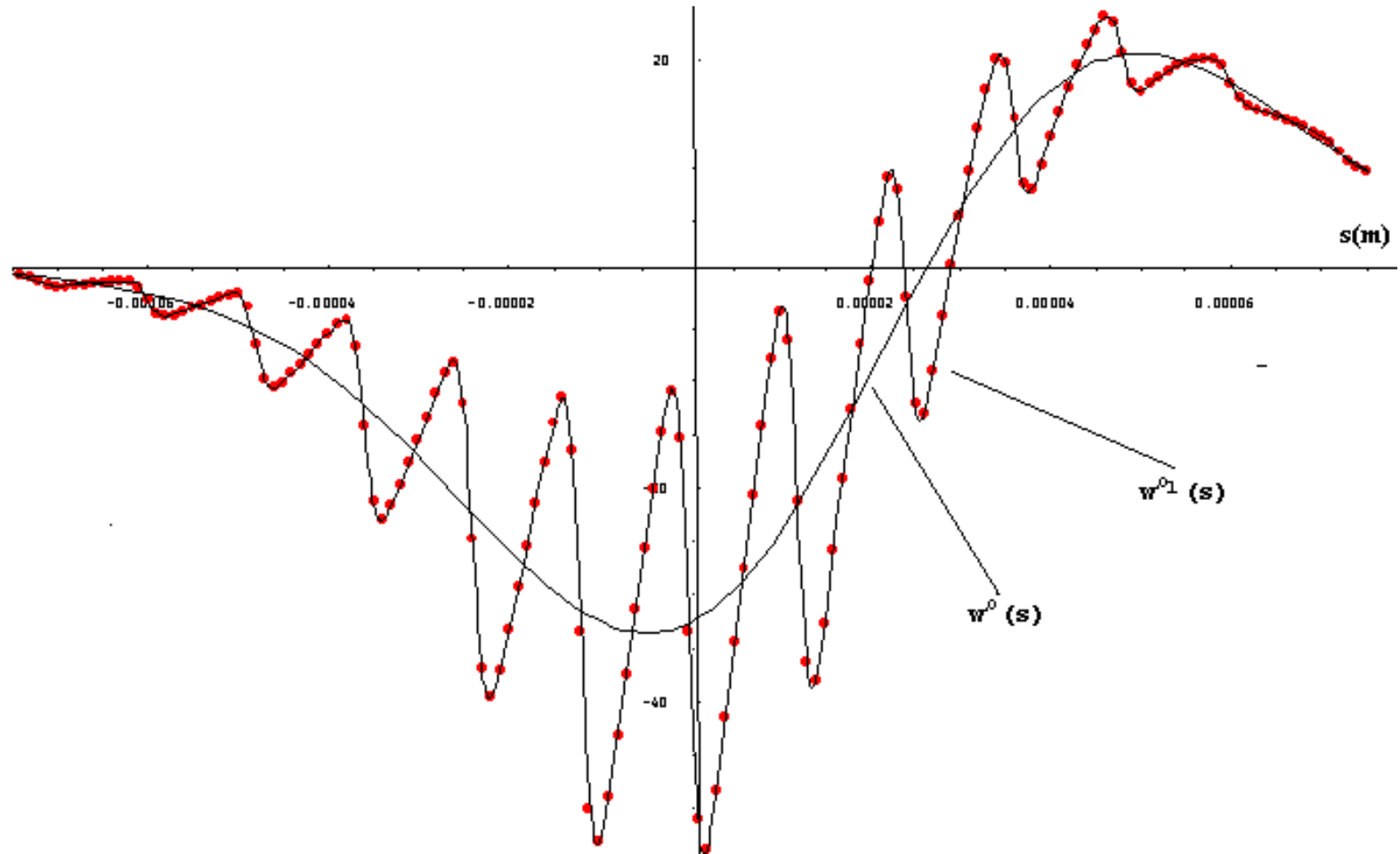
$$\lambda = 20 \mu m \quad N = \frac{12\sigma_z}{\lambda} \quad \sigma_{1z} = \frac{\sigma_z}{N} \quad a(i) = \int_{3\sigma_{1z}(4i-2)}^{3\sigma_{1z}(4i+2)} \rho(z) dz$$

$$\rho_{1i}(z) = \frac{a(i)}{\sqrt{2\pi}\sigma_{1z}} e^{-\frac{(z-12\sigma_{1z}i)^2}{2\sigma_{1z}^2}}$$

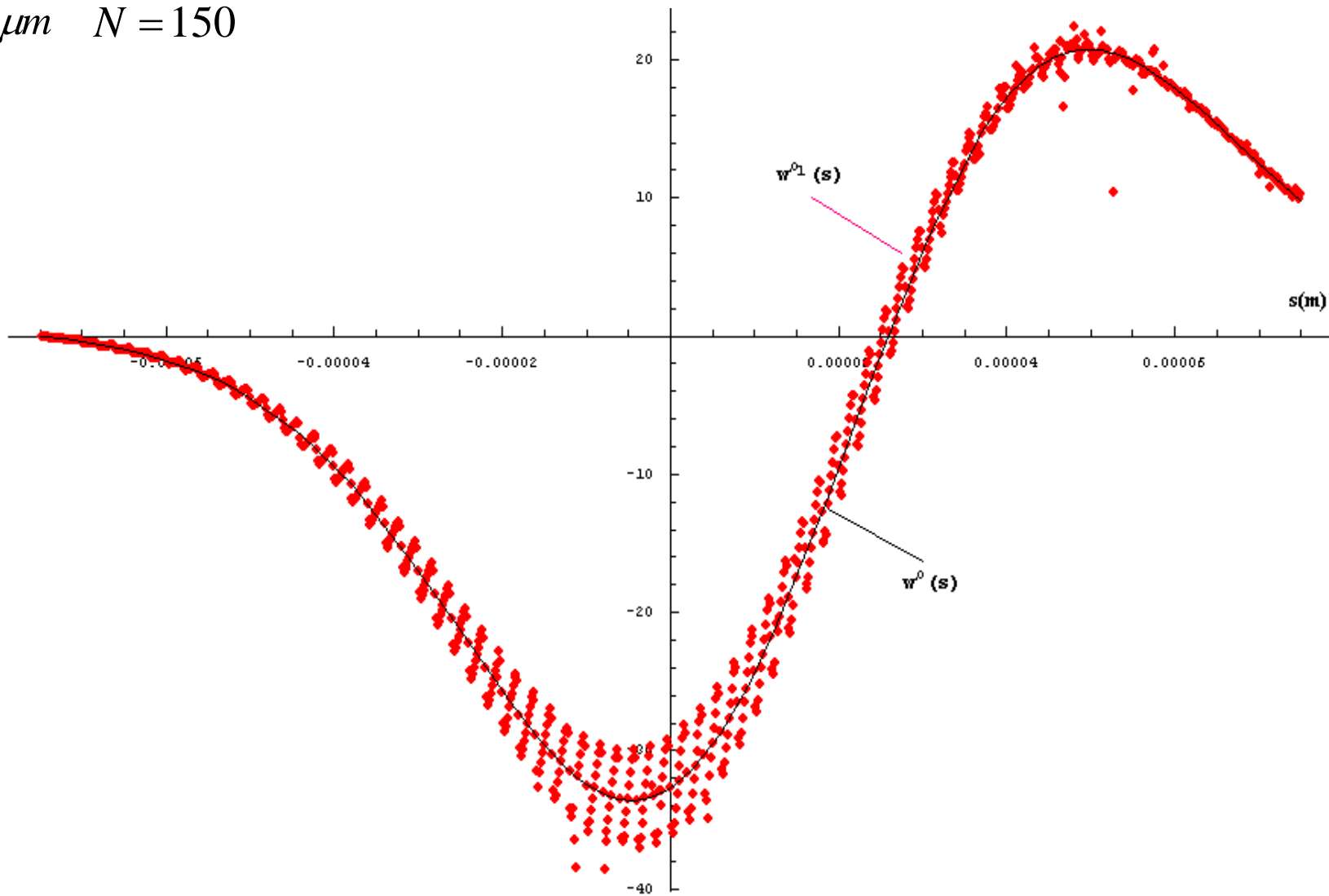
$N = 15$



$$\lambda = 20 \mu m \quad N = 15$$



$\lambda = 2\mu m$   $N = 150$



$$\lambda = 1\mu m \quad N = 300$$

