Bunch Length & Charge \( \sigma = 2.5 \times 10^{-5} \quad q = 1 \times 10^{-9} \)

**TTF Module** (8 cavities)
\[ c_n := \text{conv}(s_n, w_{TM}, \lambda, sa, sb) \quad \text{mean}(s, \lambda, c) = -1.532 \times 10^5 \quad \text{rms}(s, \lambda, c) = 8.561 \times 10^4 \]

**LOLA** (length=3.6m, r_pipe=22.44mm)
\[ d_n := \text{conv}(s_n, w_{LOLA}, \lambda, sa, sb) \quad \text{mean}(s, \lambda, d) = -2.2 \times 10^5 \quad \text{rms}(s, \lambda, d) = 9.271 \times 10^4 \]

**3rd Harmonic Cavity** (4 cavities, r_pipe=39mm, step transitions to r_p=20mm included)
\[ e_n := \text{conv}(s_n, w_{3rd}, \lambda, sa, sb) - d_{3rd}(s_n) \quad \text{mean}(s, \lambda, e) = -6.081 \times 10^5 \quad \text{rms}(s, \lambda, e) = 2.063 \times 10^5 \]

\( \sigma = 1.5 \text{mm:} \quad -5.766E4 \quad 2.312E4 \)
Bunch Length & Charge

\[ \sigma = 2.5 \times 10^{-5} \quad q = 1 \times 10^{-9} \]

**TTF Module (8 cavities)**

\[ e_n := \text{conv}\left( s_n, w_{TM}, \lambda, sa, sb \right) \]

\[ \text{mean}(s, \lambda, c) = -1.532 \times 10^5 \quad \text{rms}(s, \lambda, c) = 8.561 \times 10^4 \]

**LOLA (length=3.6m, + estimated step transition)**

\[ d_{LOLA} := d_{3rd}^{20} \quad d_n := \text{conv}\left( s_n, w_{LOLA}, \lambda, sa, sb \right) - d_{LOLA} \cdot \lambda(s_n) \]

\[ \text{mean}(s, \lambda, d) = -5.821 \times 10^5 \quad \text{rms}(s, \lambda, d) = 1.979 \times 10^5 \]

**3rd Harmonic Cavity (4 cavities, r_pipe=39mm, step transitions to r_p=20mm included)**

\[ e_n := \text{conv}\left( s_n, w_{3rd}, \lambda, sa, sb \right) - d_{3rd} \cdot \lambda(s_n) \]

\[ \text{mean}(s, \lambda, c) = -6.081 \times 10^5 \quad \text{rms}(s, \lambda, c) = 2.063 \times 10^5 \]

(\text{sigma=1.5mm}: \quad -5.766E4 \quad \quad 2.312E4)