

SPS Resistive Wall Instability

Classical Resistive Wall Formula for circular-symmetric structures:

$$W_{m=1}^{\perp} (t > 0) = \frac{cL}{\pi^{3/2} b^3} \sqrt{\frac{\mu_0 \mu_r}{\sigma_c}} \cdot \frac{1}{\sqrt{t}}$$

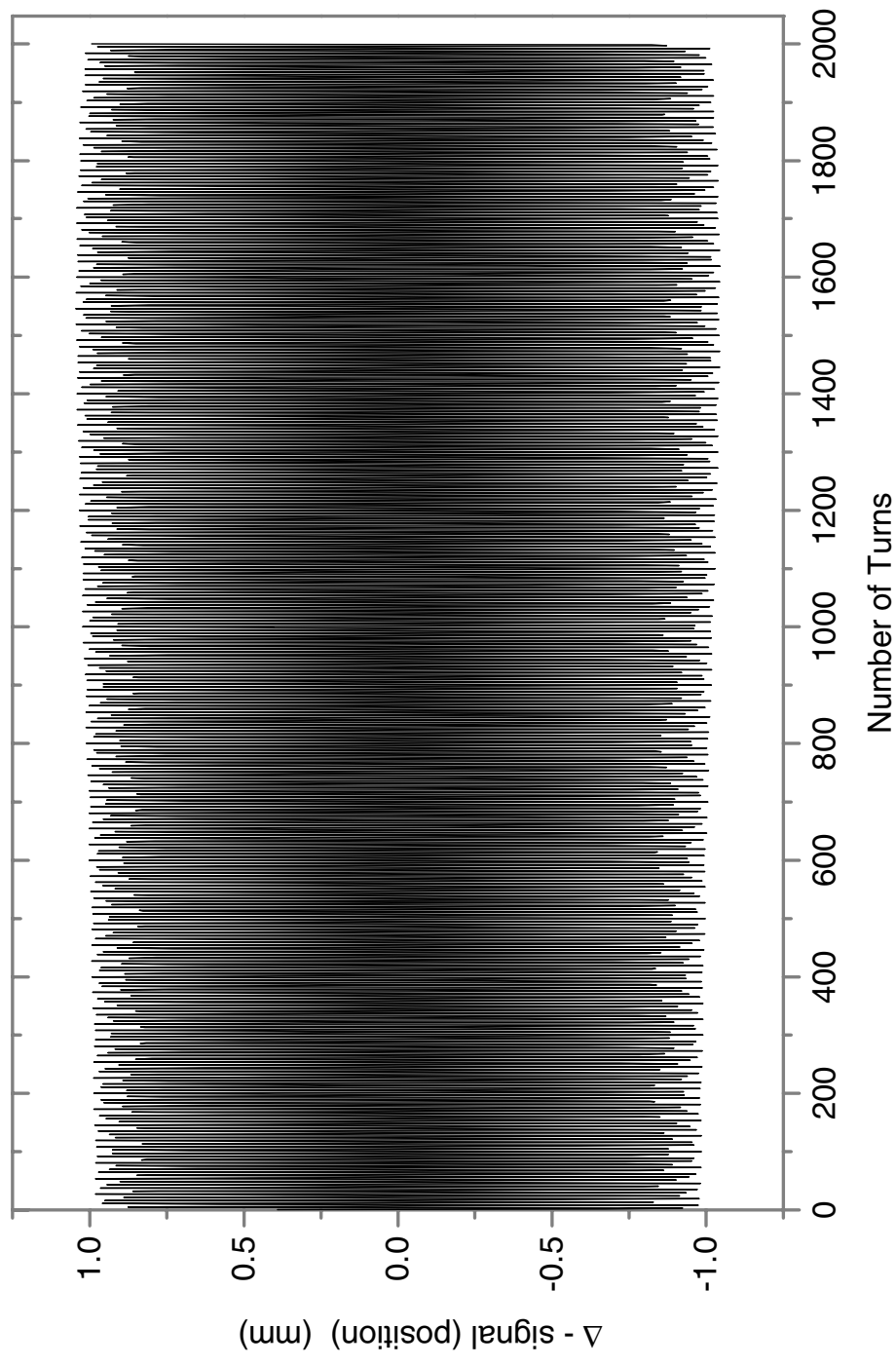
SPS vacuum chamber dimensions:

$$\begin{aligned} b_x &= 0,075 m \\ b_y &= 0,02 m \end{aligned} \quad \frac{1/b_y^3}{1/b_x^3} = \frac{125000}{2370,37} \approx 52$$

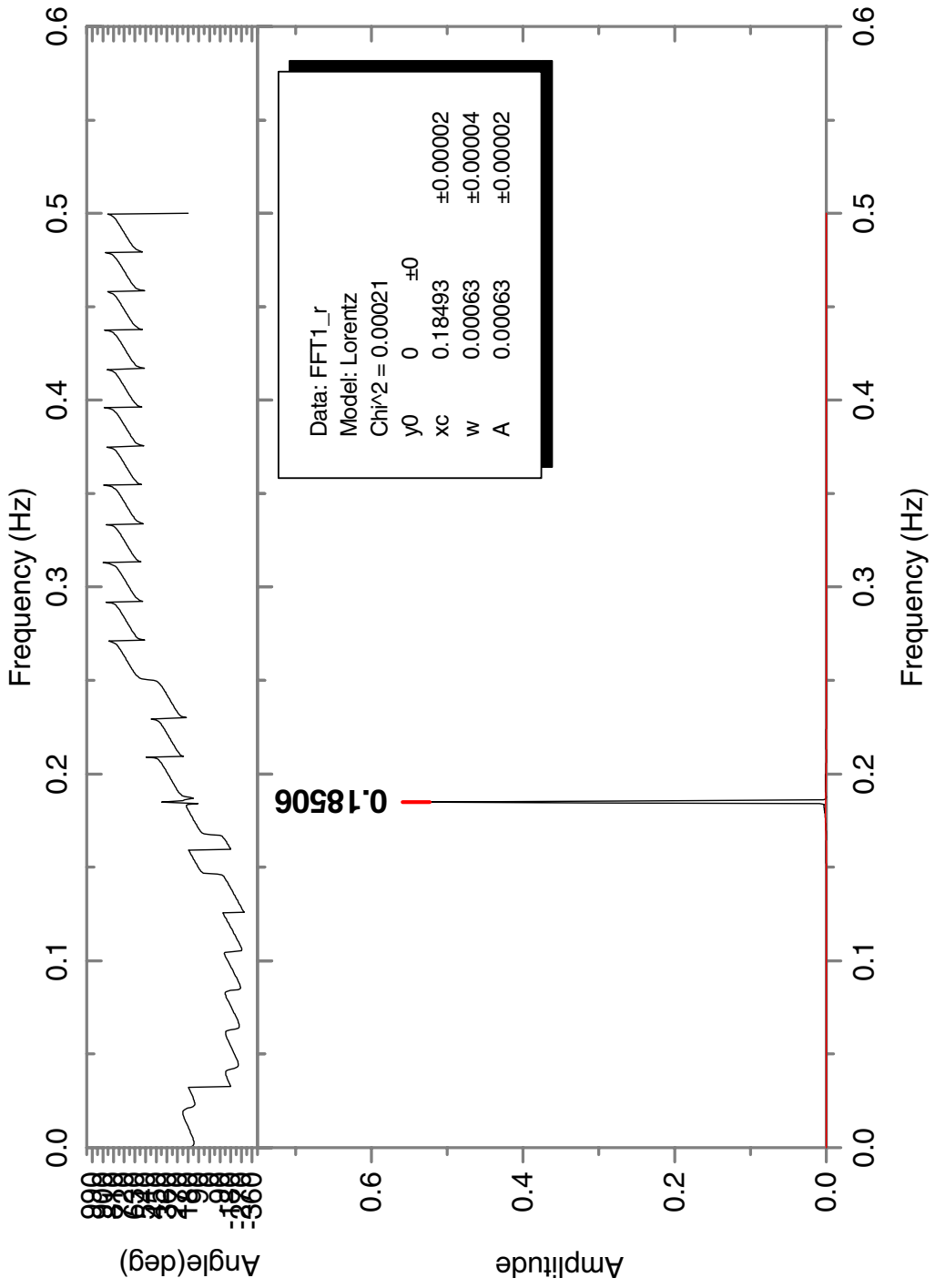
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E0=2.6D10,
BEAMIT=339.57D-3
XNU=26.185, YNU=26.185
NENCH=288, DETAIL=1, N=1000, NLOOP=2000,
SIGX1=1.0D-3, SIGY1=1.0D-3, SHINIX=1, SHINIY=1,
BUCKET=71*5, 50, 71*5, 50, 71*5, 50, 71*5, 50, 3000,
BETAXE=3*42.008,
BETAYE=3*42.008,
PHADX=0, 13.0925, 13.4562,
PHADY=0, 13.0925, 13.4562,
EVP=2.0D6,
PHIS=6*180.0,
OMEGRF=6*0.125664D10,
TRMMEM=30,
RELLEN=0.326065, 0.347797, 0.228199, 0.0489184, 0.0490197,
SIGMA=1.4D6, 1.4D6, 1.4D6, 1.4D6, 1.4D6, 1.4D6,
MUR=1.0, 1.0, 1.0, 1.0, 1.0, 1.0,
EX=0.076, 0.0645, 0.076, 0.065, 0.0415,
BY=0.076, 0.0645, 0.076, 0.065, 0.0415,
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SPS Resistive Wall, Horizontal Plane, 288 Bunches, Random Offset

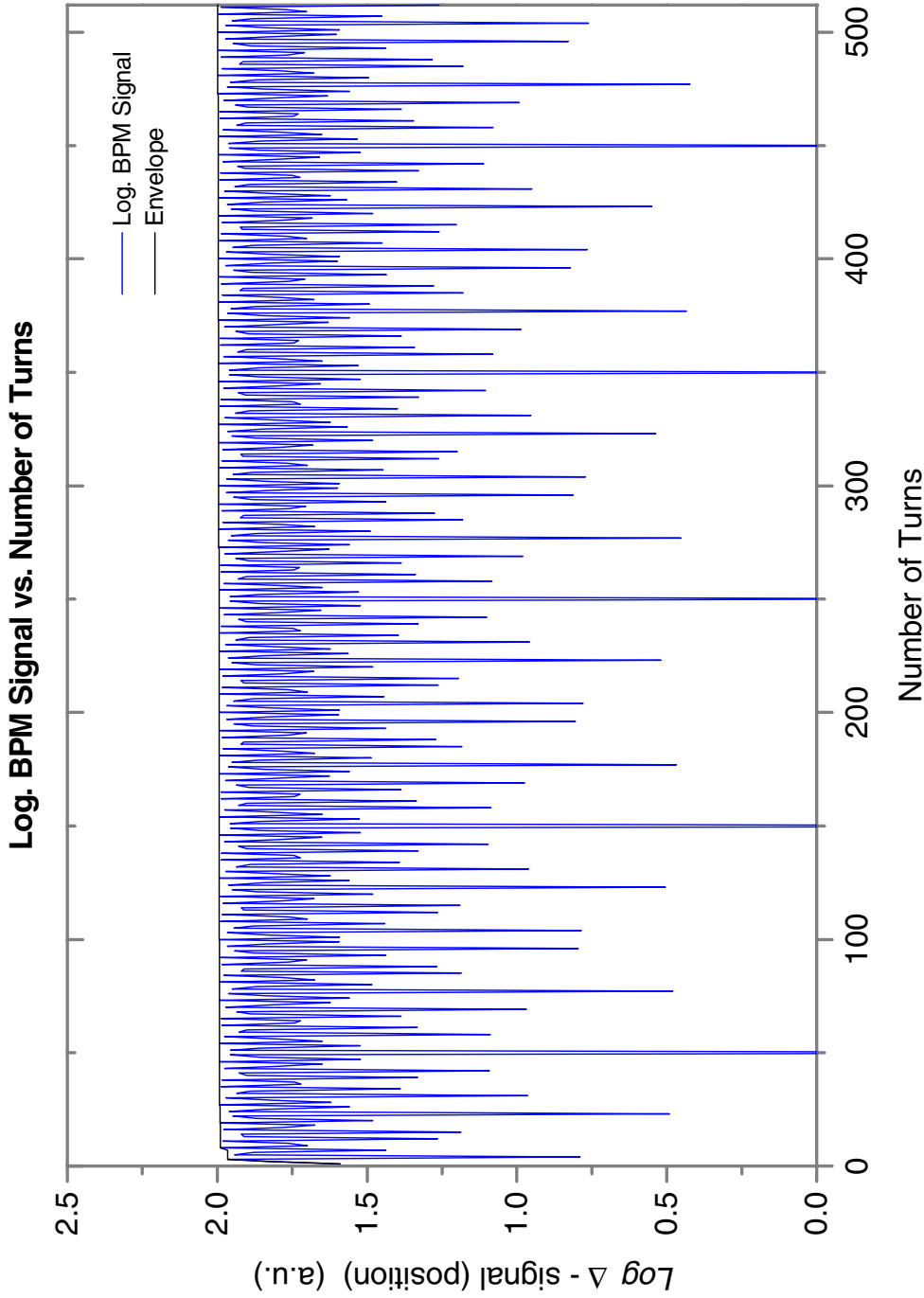
BPM Signal vs. Number of Turns



SPS Resistive Wall, Horizontal Plane, 288 Bunches, Random Offset

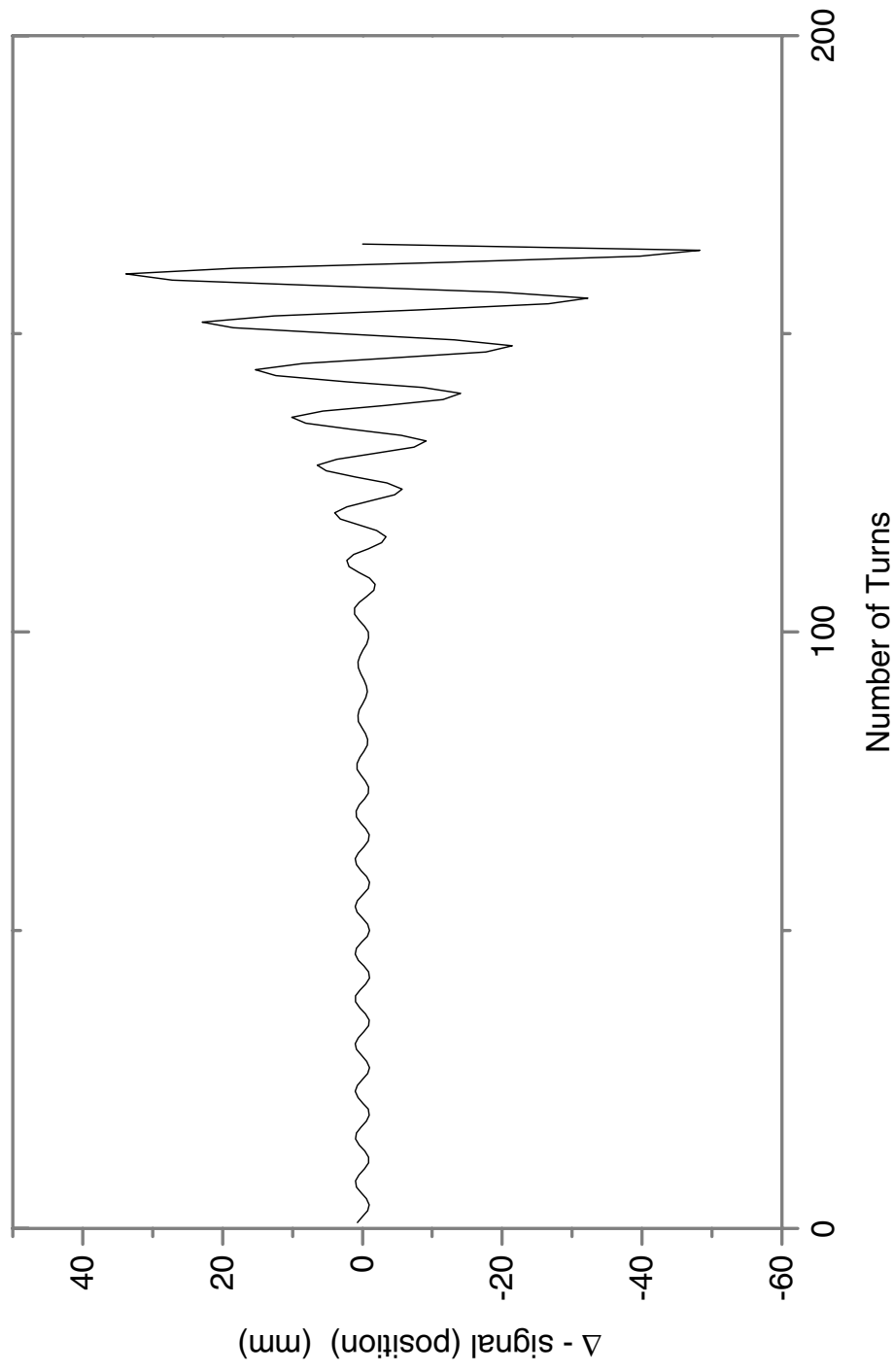


SPS Resistive Wall, Horizontal Plane, 288 Bunches, Random Offset

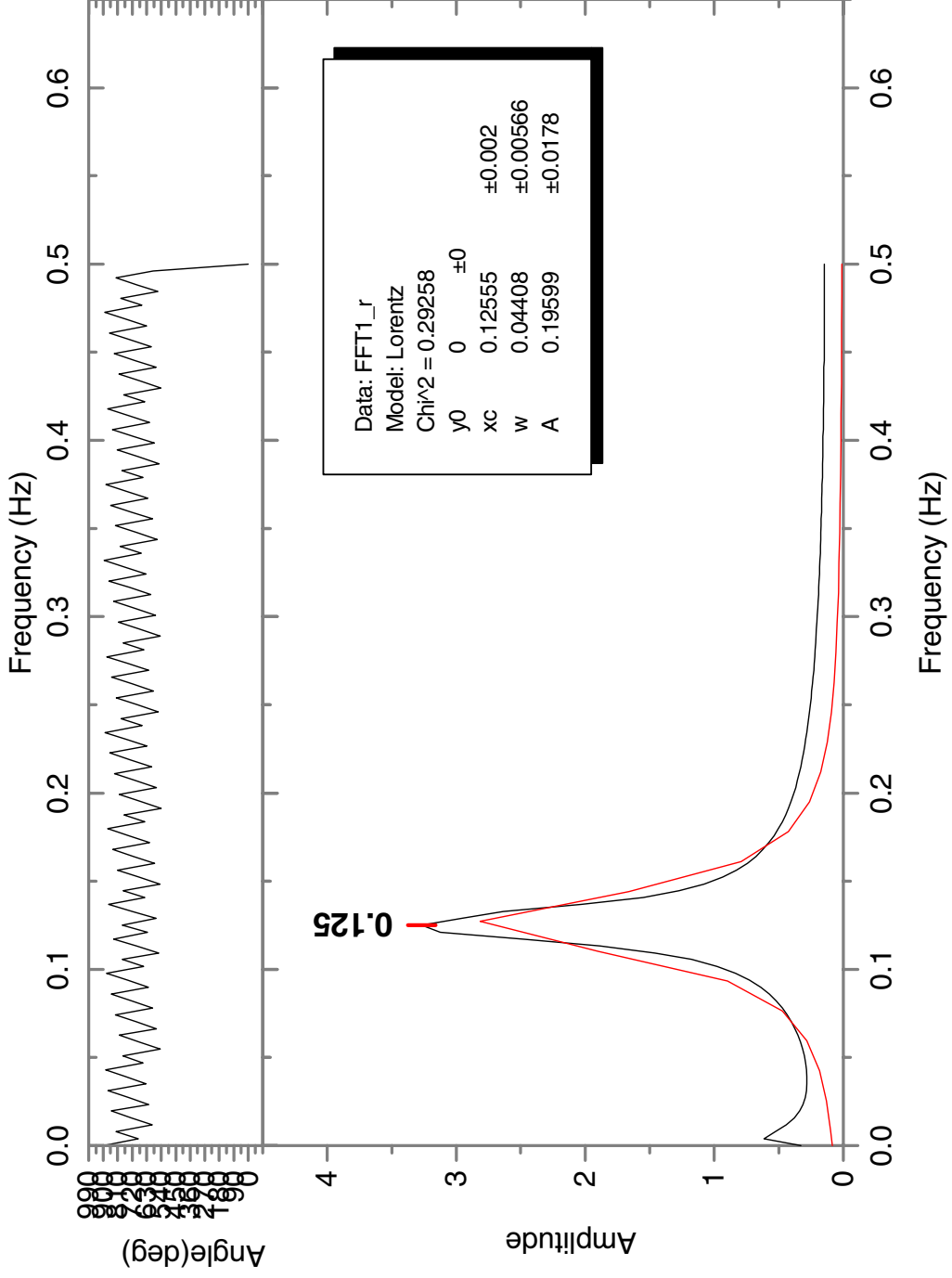


SPS Resistive Wall, Vertical Plane, 288 Bunches, Random Offset

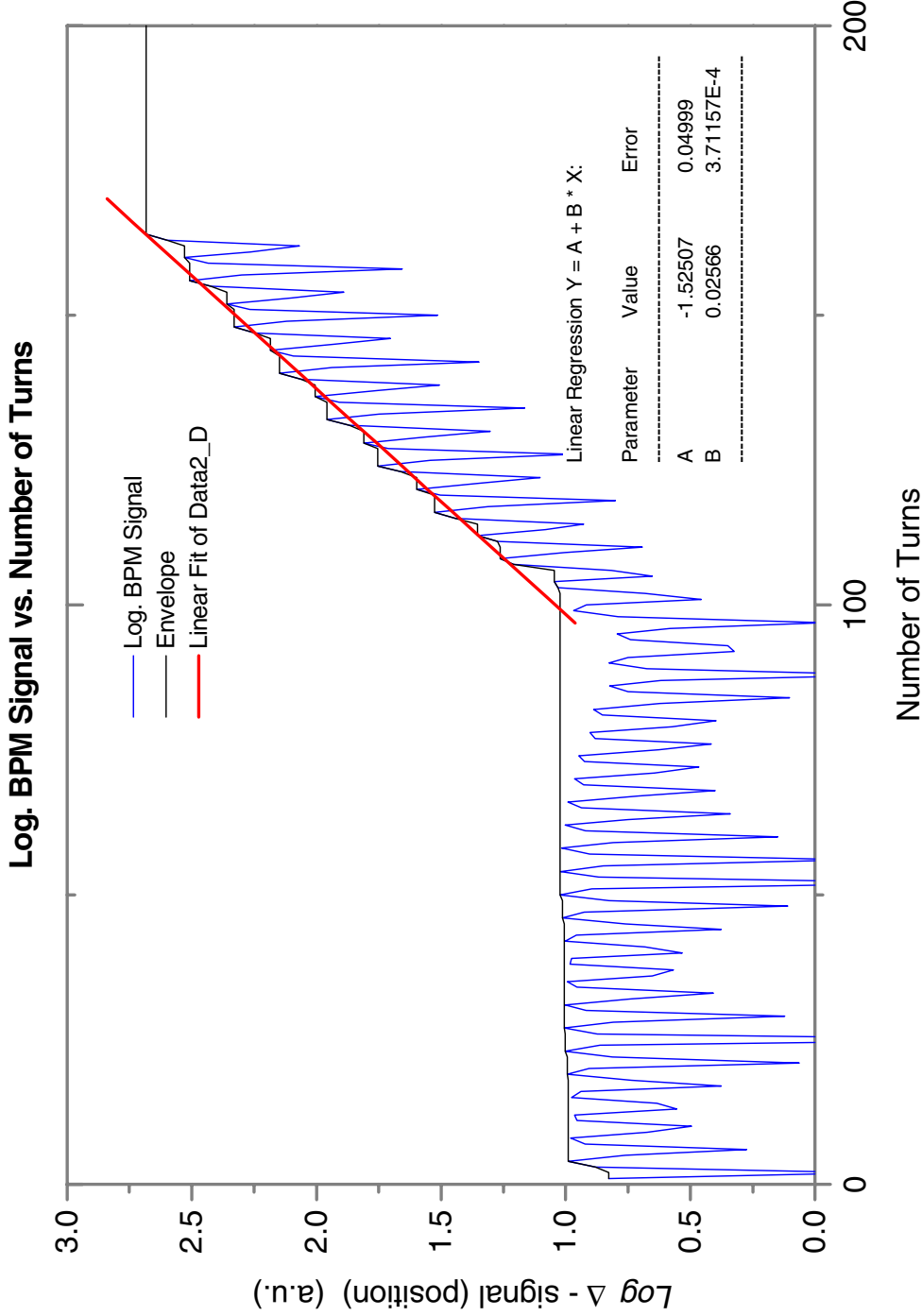
BPM Signal vs. Number of Turns



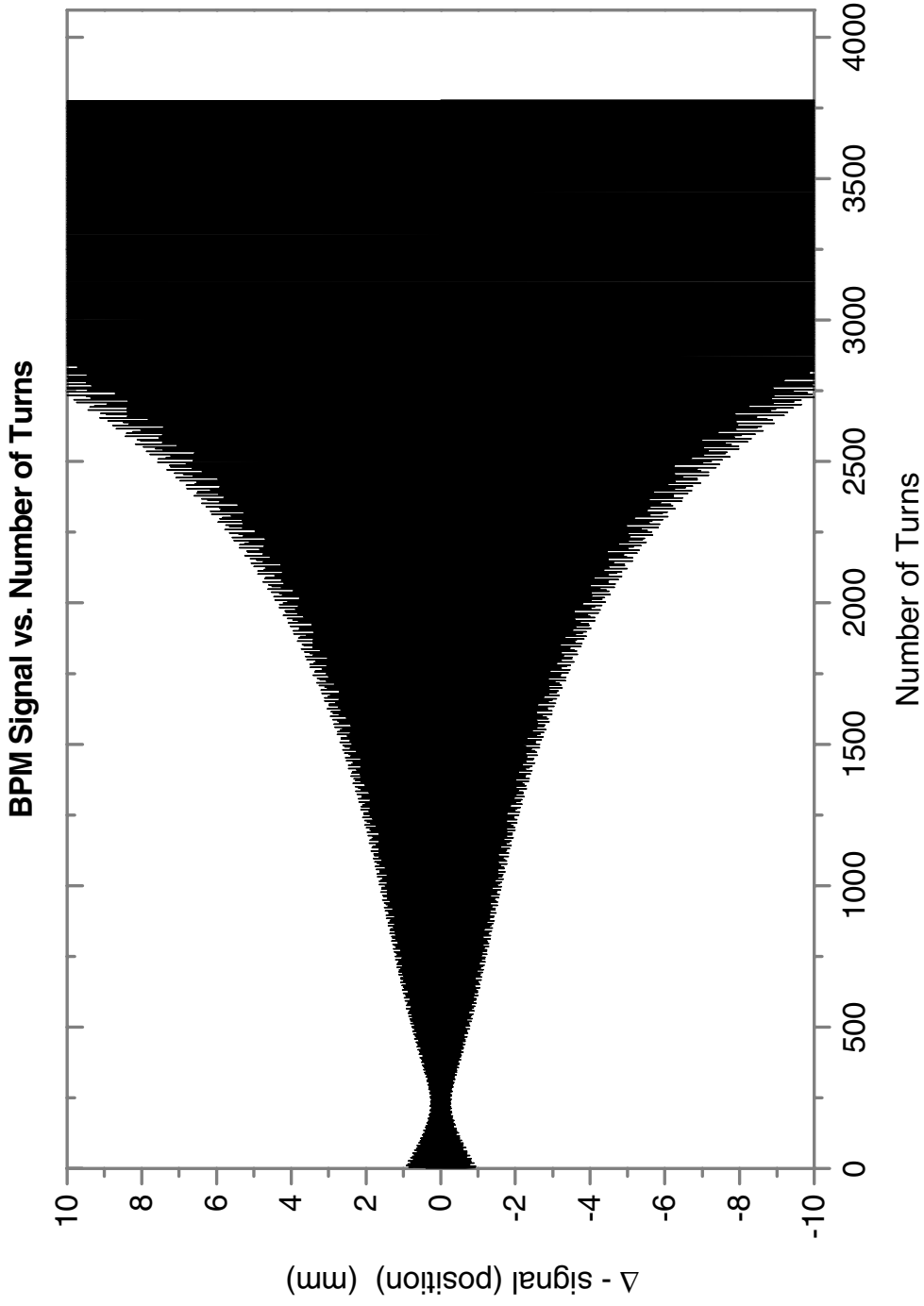
SPS Resistive Wall, Vertical Plane, 288 Bunches, Random Offset



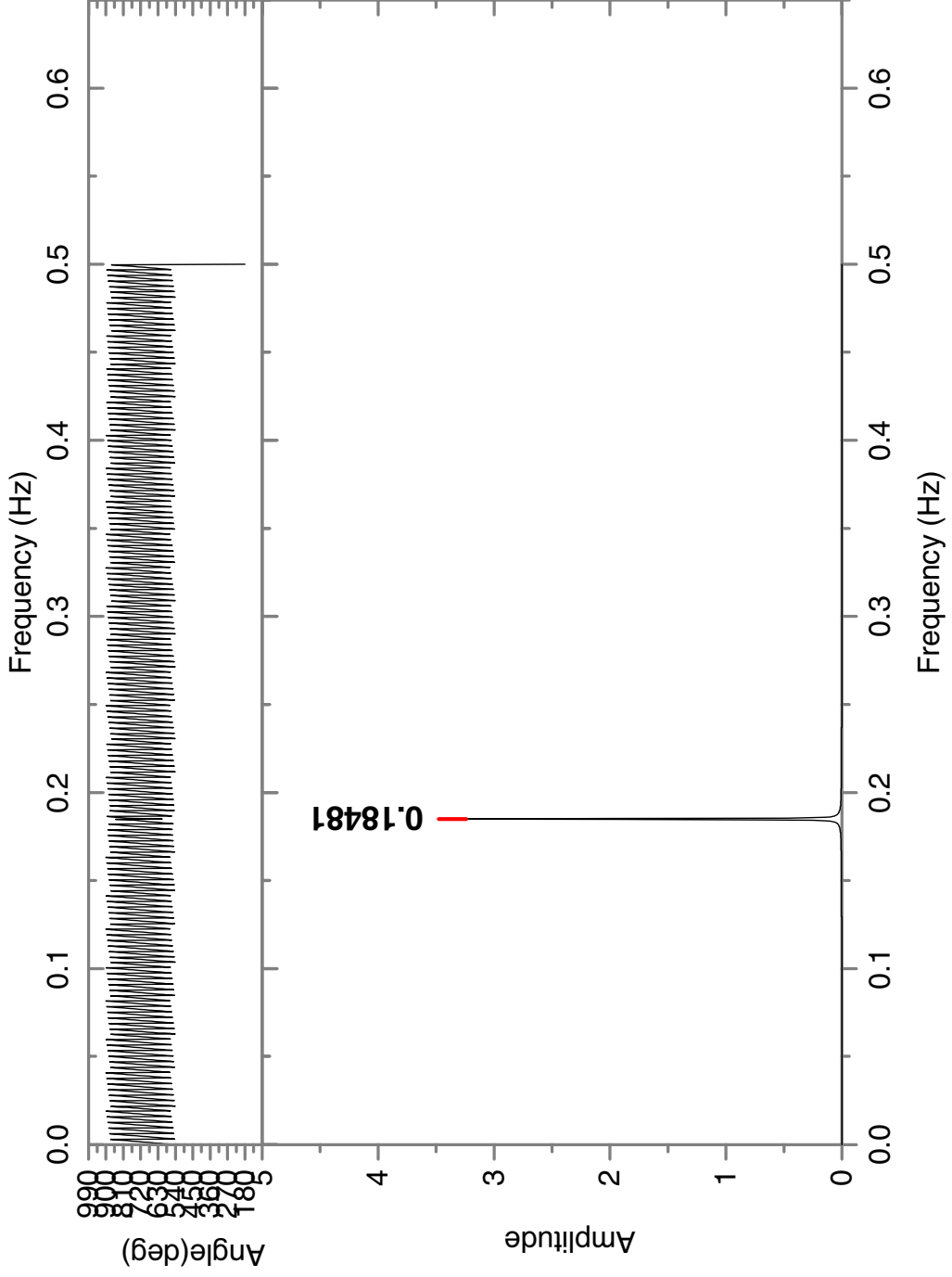
SPS Resistive Wall, Vertical Plane, 288 Bunches, Random Offset



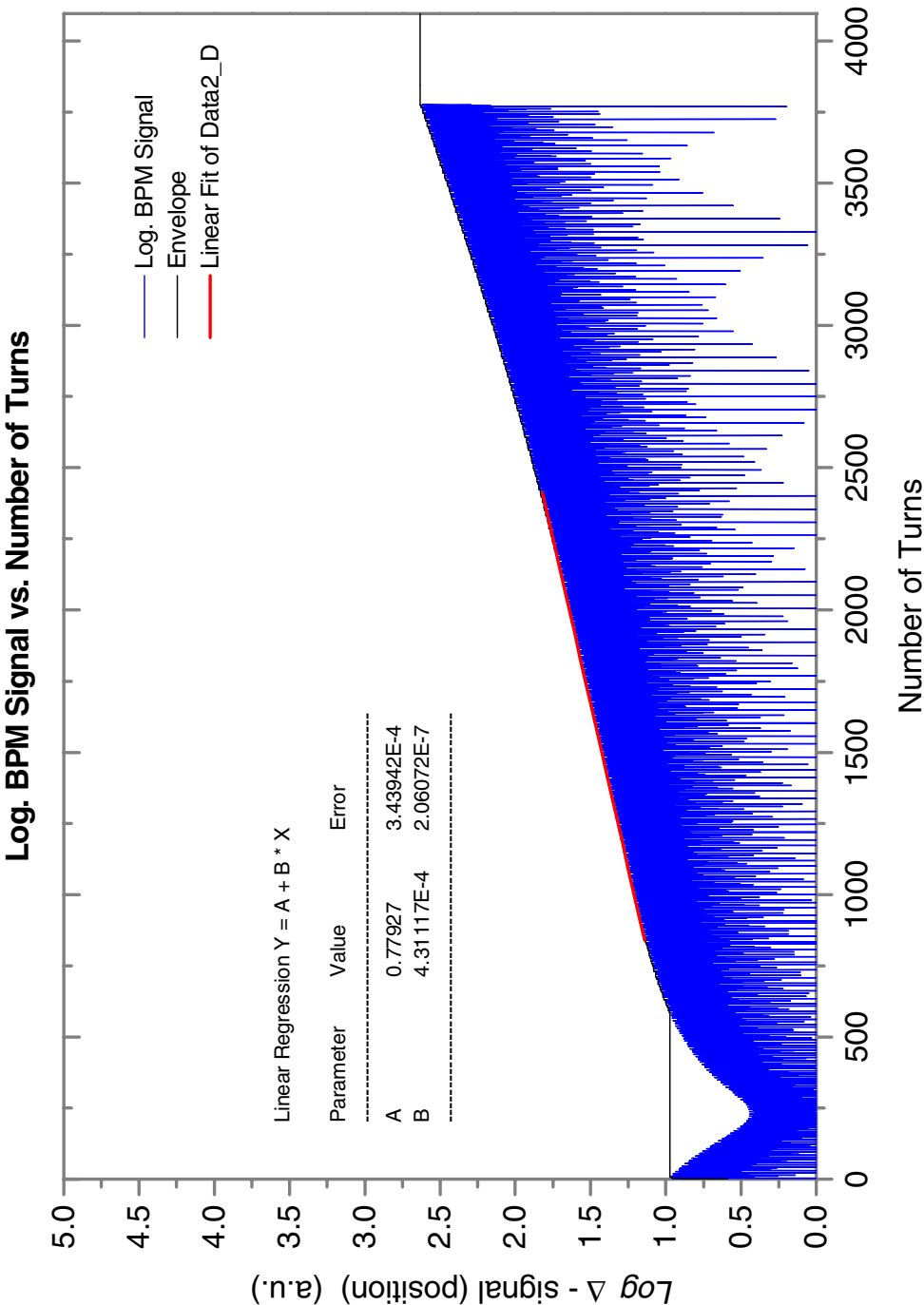
SPS Resistive Wall, Horizontal Plane, 288 Bunches, Fixed Offset



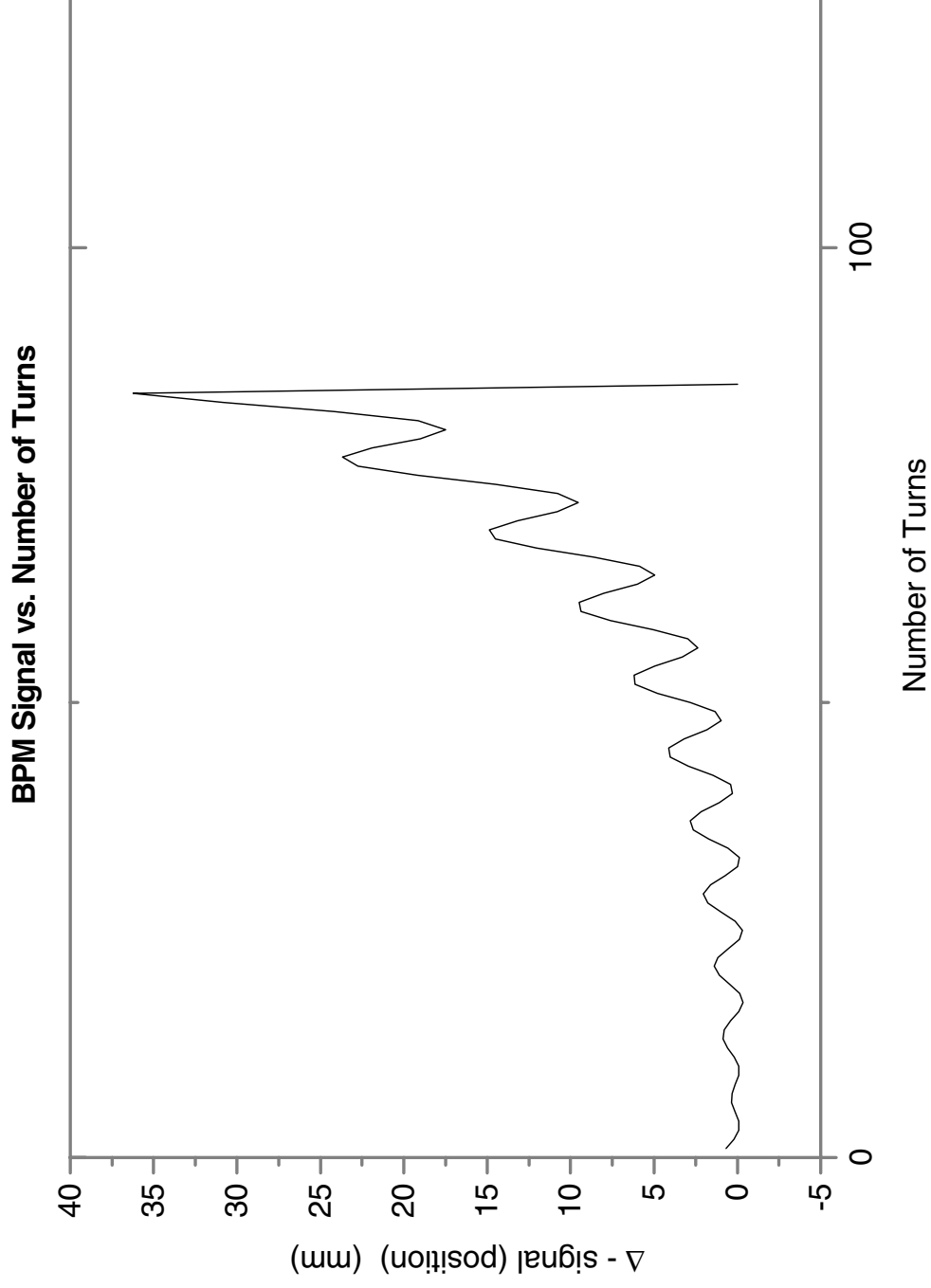
SPS Resistive Wall, Horizontal Plane, 288 Bunches, Fixed Offset



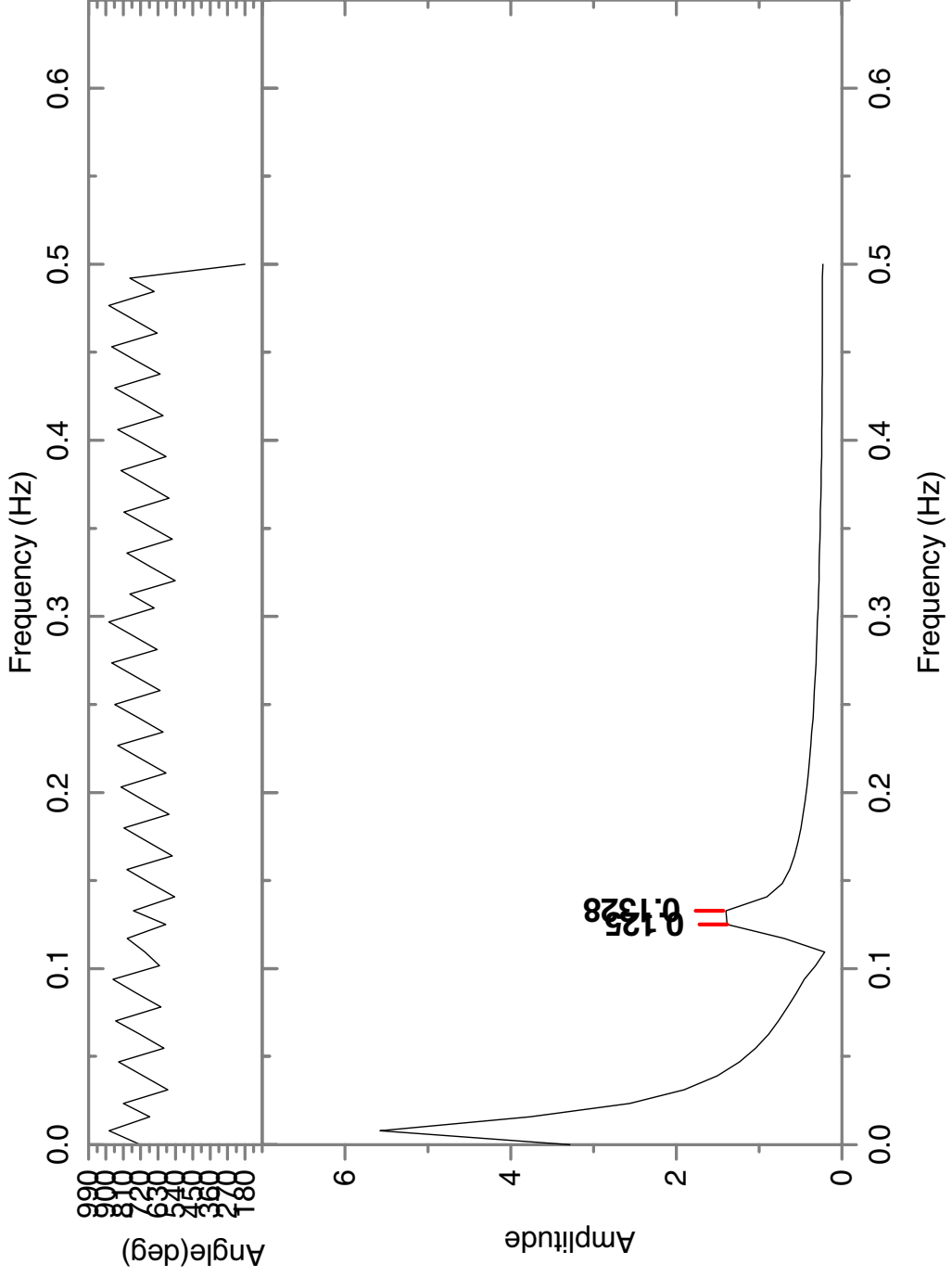
SPS Resistive Wall, Horizontal Plane, 288 Bunches, Fixed Offset



SPS Resistive Wall, Vertical Plane, 288 Bunches, Fixed Offset



SPS Resistive Wall, Vertical Plane, 288 Bunches, Fixed Offset



SPS Resistive Wall, Vertical Plane, 288 Bunches, Fixed Offset

