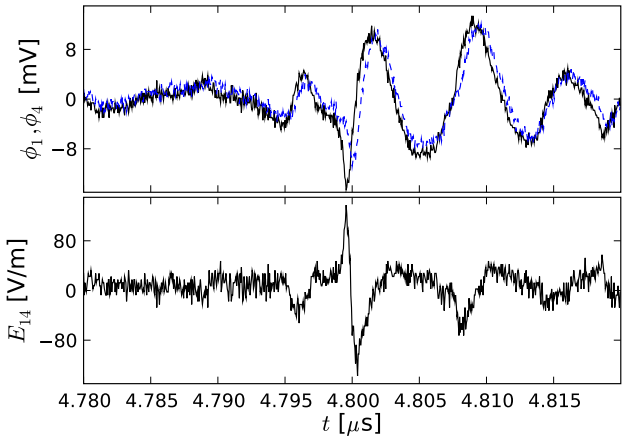

Figure 1: 100ms-90v-100g-4z-para-c, $t = 4.8$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00035$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.972$
Structure velocity: $v = 229$ km/s $= 0.0406 v_b = 0.921 v_{Te}$
Structure duration: $\Delta t_1 = 0.00353$ μs, $\Delta t_{s4} = 0.0038$ μs
Structure size: $\Delta x_1 = 808$ μm $= 15.4 \lambda_{De} = 8.11 \rho_{ce}$, $\Delta x_4 = 869$ μm $= 16.5 \lambda_{De} = 8.72 \rho_{ce}$

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1 100ms-90v-100g-4z-para-c

Experiment: 100ms-90v-100g-4z-para-c
$t = 4.8$ μs
Plasma parameters
$B = 100$ G
$n_e = 3.49e+09$ cm^{-3}
Frequencies
$f_{pe} = 531$ MHz, $f_{ce} = 280$ MHz
$f_{pi} = 12.4$ MHz
$f_{ci} = 0.076$ MHz, $f_{uh} = 600$ MHz, $f_{lh} = 4.08$ MHz
Lengths
$\lambda_{De} = 52.6s$ μm, $\rho_{ce} = 99.6$ μm, $\lambda_e = 8.99e+04$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 2.61e+03$ km/s, $c_s = 3.74$ km/s

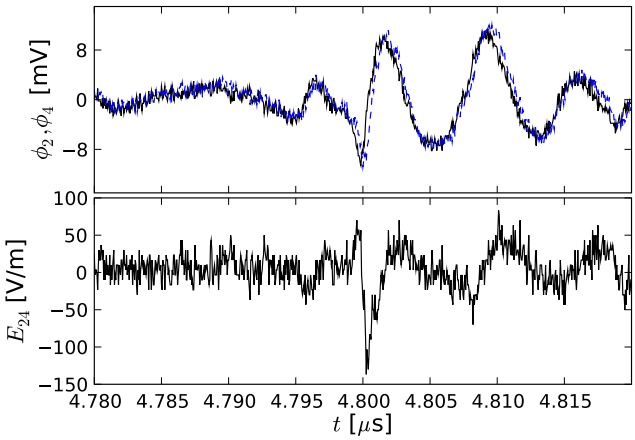

Figure 2: 100ms-90v-100g-4z-para-c, $t = 4.8$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.0003$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.974$
Structure velocity: $v = 200$ km/s $= 0.0355 v_b = 0.806 v_{Te}$
Structure duration: $\Delta t_2 = 0.00378$ μs, $\Delta t_{s4} = 0.0038$ μs
Structure size: $\Delta x_2 = 755$ μm $= 14.4 \lambda_{De} = 7.58 \rho_{ce}$, $\Delta x_4 = 760$ μm $= 14.4 \lambda_{De} = 7.63 \rho_{ce}$

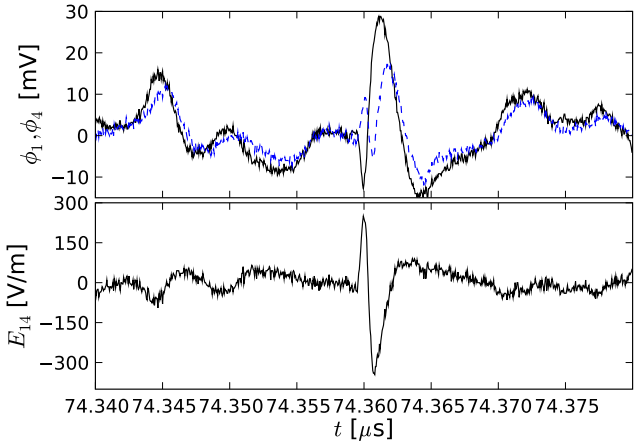

Figure 3: 100ms-90v-300g, $t = 74.4$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00055$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.942$
Structure velocity: $v = 145$ km/s $= 0.0259 v_b = 0.586 v_{Te}$
Structure duration: $\Delta t_1 = 0.00252$ μs, $\Delta t_{s4} = 0.0023$ μs
Structure size: $\Delta x_1 = 366$ μm $= 2.53 \lambda_{De} = 11 \rho_{ce}$,
$\Delta x_4 = 335$ μm $= 2.31 \lambda_{De} = 10.1 \rho_{ce}$

2 100ms-90v-300g

Experiment: 100ms-90v-300g
$t = 74.4$ μs
Plasma parameters
$B = 300$ G
$n_e = 4.61e+08$ cm^{-3}
Frequencies
$f_{pe} = 193$ MHz, $f_{ce} = 840$ MHz
$f_{pi} = 4.51$ MHz
$f_{ci} = 0.228$ MHz, $f_{uh} = 862$ MHz, $f_{lh} = 3.09$ MHz
Lengths
$\lambda_{De} = 145s$ μm, $\rho_{ce} = 33.2$ μm, $\lambda_e = 2.47e+05$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 2.15e+04$ km/s, $c_s = 3.74$ km/s

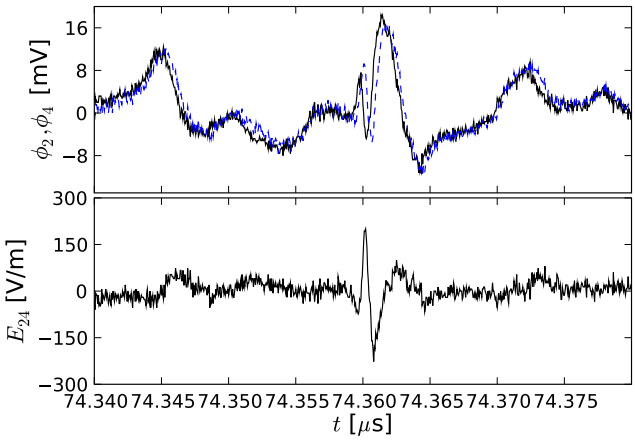

Figure 4: 100ms-90v-300g, $t = 74.4$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.0003$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.975$
Structure velocity: $v = 200$ km/s $= 0.0355 v_b = 0.806 v_{Te}$
Structure duration: $\Delta t_2 = 0.00234$ μs, $\Delta t_{s4} = 0.0023$ μs
Structure size: $\Delta x_2 = 468$ μm $= 3.23 \lambda_{De} = 14.1 \rho_{ce}$,
$\Delta x_4 = 460$ μm $= 3.18 \lambda_{De} = 13.9 \rho_{ce}$

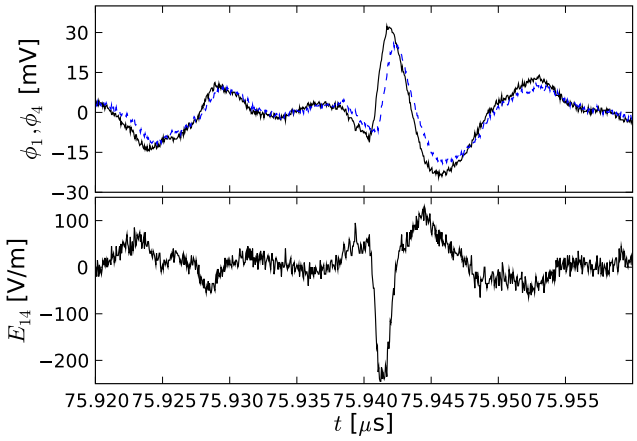

Figure 5: 100ms-90v-300g, $t = 75.9$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.0004$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.989$
Structure velocity: $v = 200$ km/s $= 0.0355 v_b = 0.806 v_{Te}$
Structure duration: $\Delta t_1 = 0.00275$ μs, $\Delta t_{s4} = 0.00266$ μs
Structure size: $\Delta x_1 = 549$ μm $= 3.71 \lambda_{De} = 16.5 \rho_{ce}$,
$\Delta x_4 = 532$ μm $= 3.59 \lambda_{De} = 16 \rho_{ce}$

Experiment: 100ms-90v-300g
$t = 75.9$ μs
Plasma parameters
$B = 300$ G
$n_e = 4.4e+08$ cm^{-3}
Frequencies
$f_{pe} = 188$ MHz, $f_{ce} = 840$ MHz
$f_{pi} = 4.41$ MHz
$f_{ci} = 0.228$ MHz, $f_{uh} = 861$ MHz, $f_{lh} = 3.02$ MHz
Lengths
$\lambda_{De} = 148s$ μm, $\rho_{ce} = 33.2$ μm, $\lambda_e = 2.53e+05$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 2.2e+04$ km/s, $c_s = 3.74$ km/s

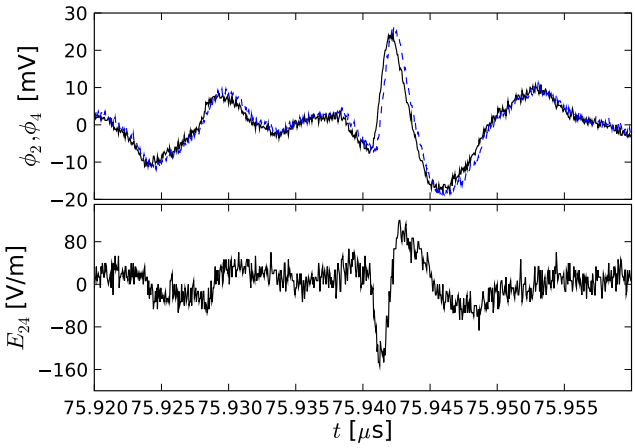

Figure 6: 100ms-90v-300g, $t = 75.9$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.00025$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.99$
Structure velocity: $v = 240$ km/s $= 0.0427 v_b = 0.967 v_{Te}$
Structure duration: $\Delta t_2 = 0.00263$ μs, $\Delta t_{s4} = 0.00266$ μs
Structure size: $\Delta x_2 = 632$ μm $= 4.27 \lambda_{De} = 19 \rho_{ce}$,
$\Delta x_4 = 638$ μm $= 4.31 \lambda_{De} = 19.2 \rho_{ce}$

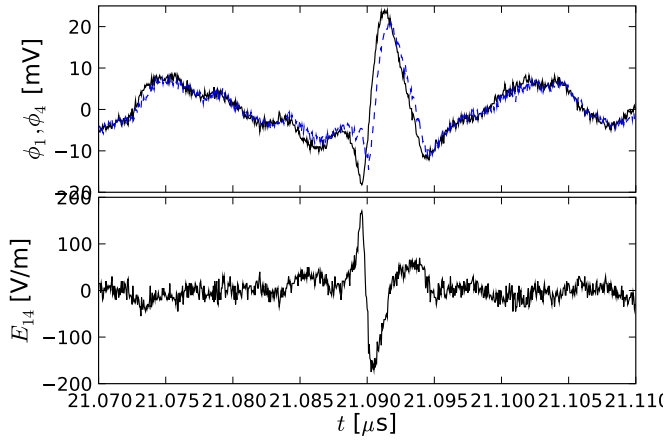

Figure 7: 100ms-90v-500g, $t = 21.1$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00035$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.978$
Structure velocity: $v = 229$ km/s $= 0.0406 v_b = 0.921 v_{Te}$
Structure duration: $\Delta t_1 = 0.00311$ μs, $\Delta t_{s4} = 0.00307$ μs
Structure size: $\Delta x_1 = 710$ μm $= 10.6 \lambda_{De} = 35.7 \rho_{ce}$,
$\Delta x_4 = 701$ μm $= 10.5 \lambda_{De} = 35.2 \rho_{ce}$

3 100ms-90v-500g

Experiment: 100ms-90v-500g
$t = 21.1$ μs
Plasma parameters
$B = 500$ G
$n_e = 2.17e+09$ cm^{-3}
Frequencies
$f_{pe} = 419$ MHz, $f_{ce} = 1.4e+03$ MHz
$f_{pi} = 9.79$ MHz
$f_{ci} = 0.38$ MHz, $f_{uh} = 1.46e+03$ MHz, $f_{lh} = 6.6$ MHz
Lengths
$\lambda_{De} = 66.7s$ μm, $\rho_{ce} = 19.9$ μm, $\lambda_e = 1.14e+05$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 1.65e+04$ km/s, $c_s = 3.74$ km/s

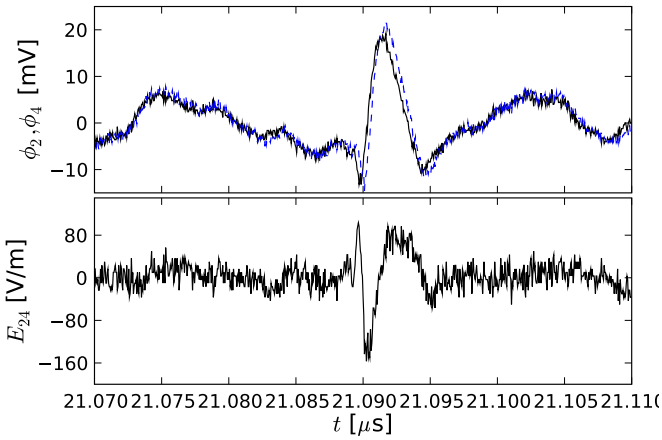

Figure 8: 100ms-90v-500g, $t = 21.1$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.00025$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.982$
Structure velocity: $v = 240$ km/s $= 0.0427 v_b = 0.967 v_{Te}$
Structure duration: $\Delta t_2 = 0.00301$ μs, $\Delta t_{s4} = 0.00307$ μs
Structure size: $\Delta x_2 = 723$ μm $= 10.8 \lambda_{De} = 36.3 \rho_{ce}$,
$\Delta x_4 = 737$ μm $= 11 \lambda_{De} = 37 \rho_{ce}$

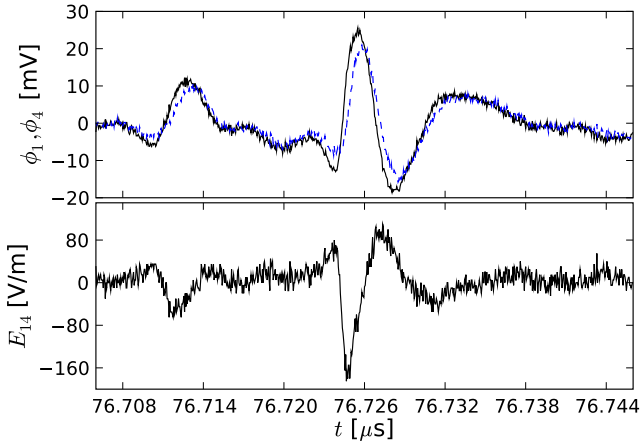

Figure 9: 100ms-90v-500g, $t = 76.7$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00035$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.985$
Structure velocity: $v = 229$ km/s $= 0.0406 v_b = 0.921 v_{Te}$
Structure duration: $\Delta t_1 = 0.00248$ μs, $\Delta t_{s4} = 0.00252$ μs
Structure size: $\Delta x_1 = 566$ μm $= 3.78\lambda_{De} = 28.4\rho_{ce}$,
$\Delta x_4 = 577$ μm $= 3.85\lambda_{De} = 29\rho_{ce}$

Experiment: 100ms-90v-500g
$t = 76.7$ μs
Plasma parameters
$B = 500$ G
$n_e = 4.3e+08$ cm^{-3}
Frequencies
$f_{pe} = 186$ MHz, $f_{ce} = 1.4e+03$ MHz
$f_{pi} = 4.36$ MHz
$f_{ci} = 0.38$ MHz, $f_{uh} = 1.41e+03$ MHz, $f_{lh} = 3.02$ MHz
Lengths
$\lambda_{De} = 150s$ μm, $\rho_{ce} = 19.9$ μm, $\lambda_e = 2.56e+05$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 3.72e+04$ km/s, $c_s = 3.74$ km/s

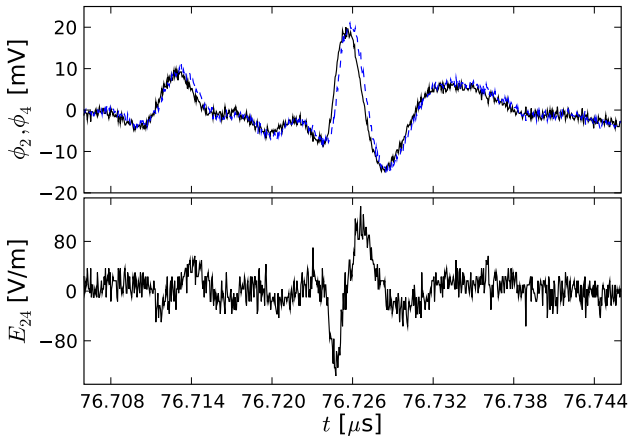

Figure 10: 100ms-90v-500g, $t = 76.7$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.00025$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.985$
Structure velocity: $v = 240$ km/s $= 0.0427 v_b = 0.967 v_{Te}$
Structure duration: $\Delta t_2 = 0.00247$ μs, $\Delta t_{s4} = 0.00252$ μs
Structure size: $\Delta x_2 = 594$ μm $= 3.96\lambda_{De} = 29.8\rho_{ce}$,
$\Delta x_4 = 606$ μm $= 4.04\lambda_{De} = 30.4\rho_{ce}$

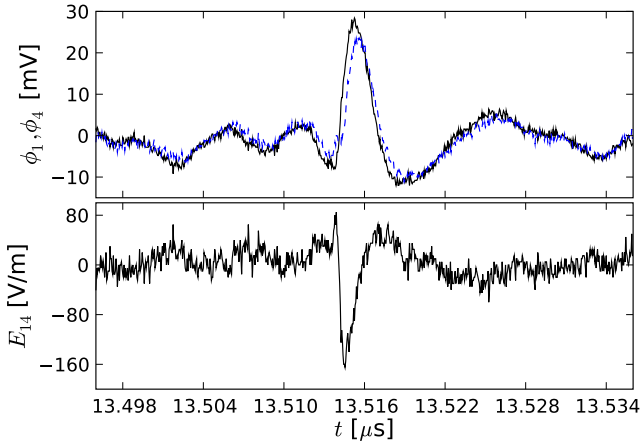

Figure 11: 100ms-90v-750g, $t = 13.5$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.0003$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.977$
Structure velocity: $v = 267$ km/s $= 0.0474 v_b = 1.07 v_{Te}$
Structure duration: $\Delta t_1 = 0.00287$ μs, $\Delta t_{s4} = 0.00295$ μs
Structure size: $\Delta x_1 = 767$ μm $= 12.8 \lambda_{De} = 57.8 \rho_{ce}$,
$\Delta x_4 = 786$ μm $= 13.2 \lambda_{De} = 59.2 \rho_{ce}$

4 100ms-90v-750g

Experiment: 100ms-90v-750g
$t = 13.5$ μs
Plasma parameters
$B = 750$ G
$n_e = 2.71e+09$ cm^{-3}
Frequencies
$f_{pe} = 467$ MHz, $f_{ce} = 2.1e+03$ MHz
$f_{pi} = 10.9$ MHz
$f_{ci} = 0.57$ MHz, $f_{uh} = 2.15e+03$ MHz, $f_{lh} = 7.49$ MHz
Lengths
$\lambda_{De} = 59.7s$ μm, $\rho_{ce} = 13.3$ μm, $\lambda_e = 1.02e+05$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 2.22e+04$ km/s, $c_s = 3.74$ km/s

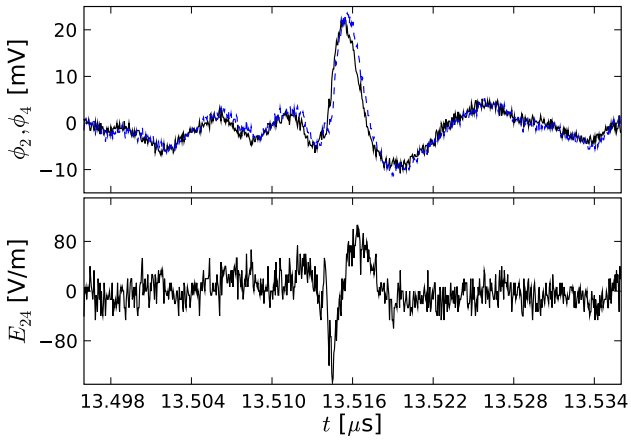

Figure 12: 100ms-90v-750g, $t = 13.5$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.00025$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.978$
Structure velocity: $v = 240$ km/s $= 0.0427 v_b = 0.967 v_{Te}$
Structure duration: $\Delta t_2 = 0.00291$ μs, $\Delta t_{s4} = 0.00295$ μs
Structure size: $\Delta x_2 = 699$ μm $= 11.7 \lambda_{De} = 52.7 \rho_{ce}$,
$\Delta x_4 = 707$ μm $= 11.8 \lambda_{De} = 53.3 \rho_{ce}$

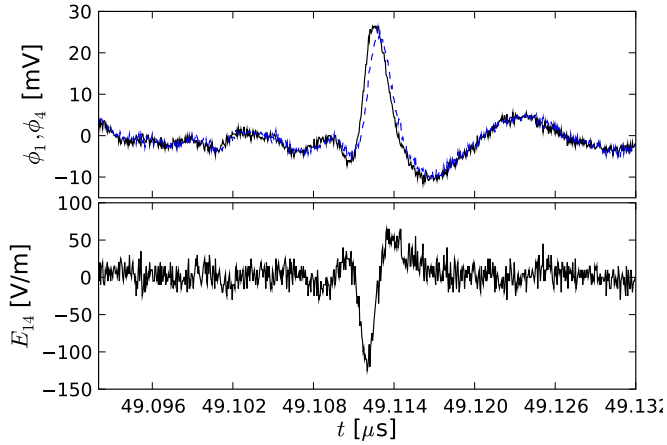

Figure 13: 100ms-90v-750g, $t = 49.1$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00025$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.982$
Structure velocity: $v = 320$ km/s $= 0.0569 v_b = 1.29 v_{Te}$
Structure duration: $\Delta t_1 = 0.00293$ μs, $\Delta t_{s4} = 0.00302$ μs
Structure size: $\Delta x_1 = 936$ μm $= 9.34 \lambda_{De} = 70.5 \rho_{ce}$, $\Delta x_4 = 965$ μm $= 9.63 \lambda_{De} = 72.7 \rho_{ce}$

Experiment: 100ms-90v-750g
$t = 49.1$ μs
Plasma parameters
$B = 750$ G
$n_e = 9.61e+08$ cm^{-3}
Frequencies
$f_{pe} = 278$ MHz, $f_{ce} = 2.1e+03$ MHz
$f_{pi} = 6.51$ MHz
$f_{ci} = 0.57$ MHz, $f_{uh} = 2.12e+03$ MHz, $f_{lh} = 4.51$ MHz
Lengths
$\lambda_{De} = 100s$ μm, $\rho_{ce} = 13.3$ μm, $\lambda_e = 1.71e+05$ μm
Velocities
$v_b = 5.63e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 3.73e+04$ km/s, $c_s = 3.74$ km/s

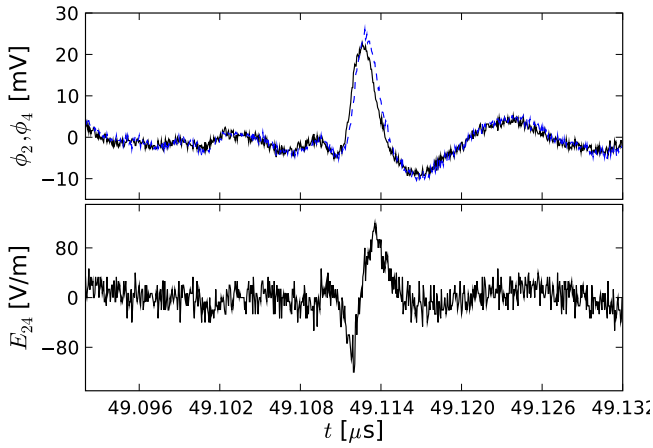

Figure 14: 100ms-90v-750g, $t = 49.1$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.0002$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.981$
Structure velocity: $v = 300$ km/s $= 0.0533 v_b = 1.21 v_{Te}$
Structure duration: $\Delta t_2 = 0.00294$ μs, $\Delta t_{s4} = 0.00302$ μs
Structure size: $\Delta x_2 = 882$ μm $= 8.8 \lambda_{De} = 66.4 \rho_{ce}$, $\Delta x_4 = 905$ μm $= 9.03 \lambda_{De} = 68.2 \rho_{ce}$

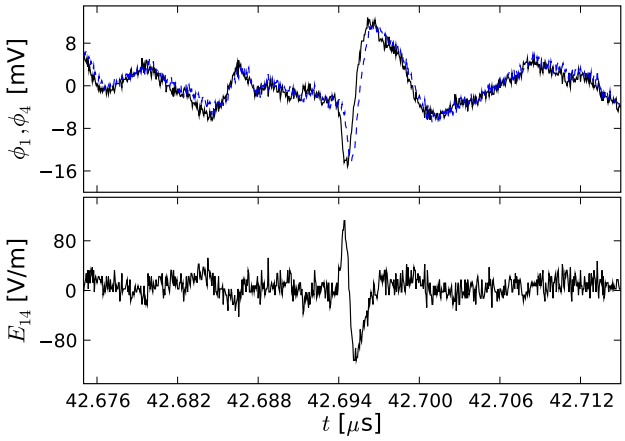

Figure 15: 150ms-120v, $t = 42.7$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00025$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.943$
Structure velocity: $v = 320$ km/s $= 0.0493 v_b = 1.29 v_{Te}$
Structure duration: $\Delta t_1 = 0.00408$ μs, $\Delta t_{s4} = 0.00408$ μs
Structure size: $\Delta x_1 = 1.31e{+}03$ μm $= 6.91 \lambda_{De} = 9.84 \rho_{ce}$,
$\Delta x_4 = 1.31e+03$ μm $= 6.91 \lambda_{De} = 9.84 \rho_{ce}$

5 150ms-120v

Experiment: 150ms-120v
$t = 42.7$ μs
Plasma parameters
$B = 75$ G
$n_e = 2.7e+08$ cm^{-3}
Frequencies
$f_{pe} = 148$ MHz, $f_{ce} = 210$ MHz
$f_{pi} = 3.45$ MHz
$f_{ci} = 0.057$ MHz, $f_{uh} = 257$ MHz, $f_{lh} = 1.99$ MHz
Lengths
$\lambda_{De} = 189s$ μm, $\rho_{ce} = 133$ μm, $\lambda_e = 3.23e+05$ μm
Velocities
$v_b = 6.5e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 7.03e+03$ km/s, $c_s = 3.74$ km/s

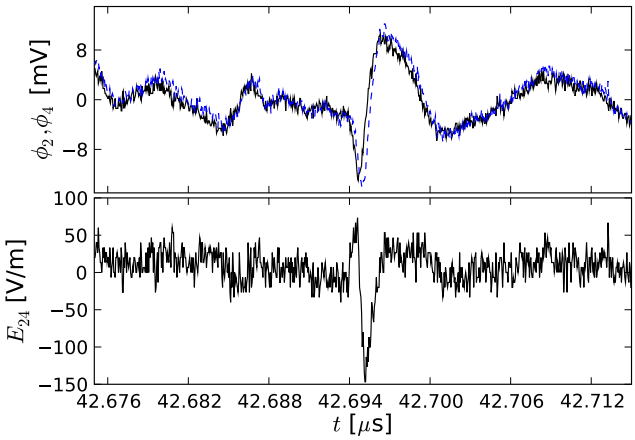

Figure 16: 150ms-120v, $t = 42.7$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.0002$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.948$
Structure velocity: $v = 300$ km/s $= 0.0462 v_b = 1.21 v_{Te}$
Structure duration: $\Delta t_2 = 0.00388$ μs, $\Delta t_{s4} = 0.00408$ μs
Structure size: $\Delta x_2 = 1.16e{+}03$ μm $= 6.16 \lambda_{De} = 8.77 \rho_{ce}$,
$\Delta x_4 = 1.22e+03$ μm $= 6.48 \lambda_{De} = 9.22 \rho_{ce}$

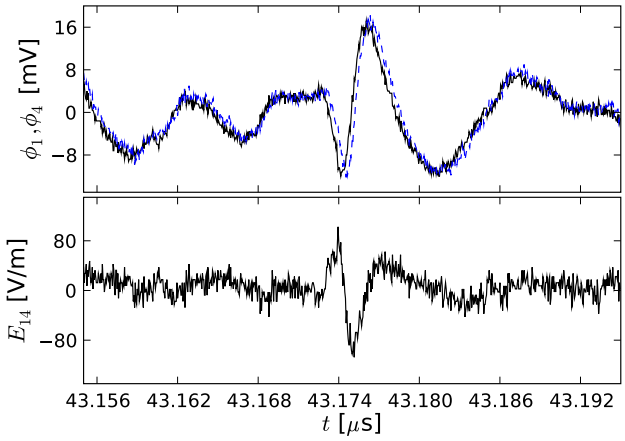

Figure 17: 150ms-120v, $t = 43.2$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.0003$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.98$
Structure velocity: $v = 267$ km/s $= 0.041 v_b = 1.07 v_{Te}$
Structure duration: $\Delta t_1 = 0.00327$ μs, $\Delta t_{s4} = 0.00342$ μs
Structure size: $\Delta x_1 = 873$ μm $= 4.58 \lambda_{De} = 6.57 \rho_{ce}$,
$\Delta x_4 = 912$ μm $= 4.79 \lambda_{De} = 6.87 \rho_{ce}$

Experiment: 150ms-120v
$t = 43.2$ μs
Plasma parameters
$B = 75$ G
$n_e = 2.67e+08$ cm^{-3}
Frequencies
$f_{pe} = 147$ MHz, $f_{ce} = 210$ MHz
$f_{pi} = 3.43$ MHz
$f_{ci} = 0.057$ MHz, $f_{uh} = 256$ MHz, $f_{lh} = 1.98$ MHz
Lengths
$\lambda_{De} = 190s$ μm, $\rho_{ce} = 133$ μm, $\lambda_e = 3.25e+05$ μm
Velocities
$v_b = 6.5e+03$ km/s, $v_{Te} = 248$ km/s
$c_A = 7.08e+03$ km/s, $c_s = 3.74$ km/s

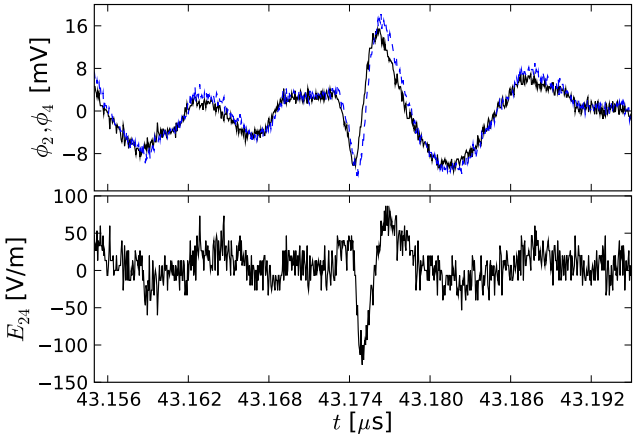

Figure 18: 150ms-120v, $t = 43.2$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.00025$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.978$
Structure velocity: $v = 240$ km/s $= 0.0369 v_b = 0.967 v_{Te}$
Structure duration: $\Delta t_2 = 0.00329$ μs, $\Delta t_{s4} = 0.00342$ μs
Structure size: $\Delta x_2 = 790$ μm $= 4.15 \lambda_{De} = 5.95 \rho_{ce}$,
$\Delta x_4 = 820$ μm $= 4.31 \lambda_{De} = 6.18 \rho_{ce}$

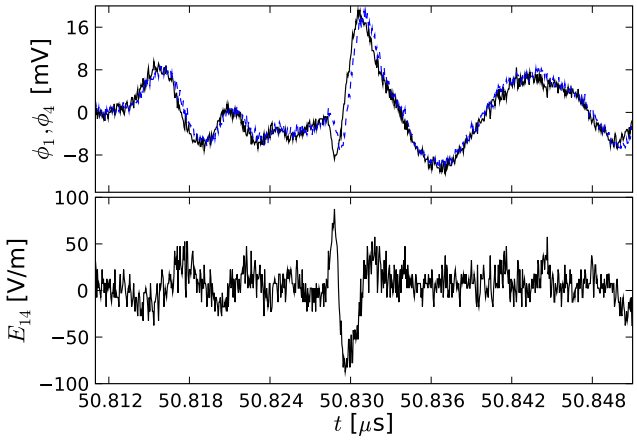

Figure 19: 150ms-120v, $t = 50.8$ μs, Probes (1,4).
Time delay between probes: $\Delta t_{14} = 0.00025$ μs
Distance between probes: $\Delta r_{14} = 80$ μm
Correlation coefficient: $r = 0.98$
Structure velocity: $v = 320$ km/s $= 0.0493 v_b = 1.29 v_{Te}$
Structure duration: $\Delta t_1 = 0.00421$ μs, $\Delta t_{s4} = 0.00416$ μs
Structure size: $\Delta x_1 = 1.35e{+}03$ μm $= 6.33 \lambda_{De} = 10.2 \rho_{ce}$,
$\Delta x_4 = 1.33e + 03$ μm $= 6.26 \lambda_{De} = 10 \rho_{ce}$

Experiment: 150ms-120v
$t = 50.8$ μs
Plasma parameters
$B = 75$ G
$n_e = 2.13e + 08$ cm^{-3}
Frequencies
$f_{pe} = 131$ MHz, $f_{ce} = 210$ MHz
$f_{pi} = 3.07$ MHz
$f_{ci} = 0.057$ MHz, $f_{uh} = 248$ MHz, $f_{lh} = 1.83$ MHz
Lengths
$\lambda_{De} = 213s$ μm, $\rho_{ce} = 133$ μm, $\lambda_e = 3.64e + 05$ μm
Velocities
$v_b = 6.5e + 03$ km/s, $v_{Te} = 248$ km/s
$c_A = 7.92e + 03$ km/s, $c_s = 3.74$ km/s

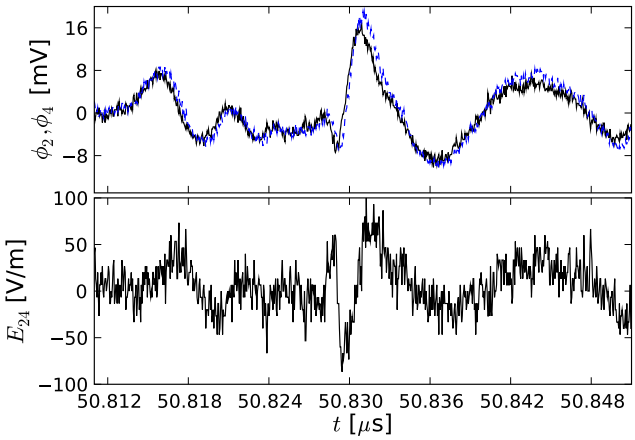

Figure 20: 150ms-120v, $t = 50.8$ μs, Probes (2,4).
Time delay between probes: $\Delta t_{24} = 0.0002$ μs
Distance between probes: $\Delta r_{24} = 60$ μm
Correlation coefficient: $r = 0.983$
Structure velocity: $v = 300$ km/s $= 0.0462 v_b = 1.21 v_{Te}$
Structure duration: $\Delta t_2 = 0.00402$ μs, $\Delta t_{s4} = 0.00416$ μs
Structure size: $\Delta x_2 = 1.21e + 03$ μm $= 5.67 \lambda_{De} = 9.1 \rho_{ce}$,
$\Delta x_4 = 1.25e + 03$ μm $= 5.87 \lambda_{De} = 9.41 \rho_{ce}$