A closer look at Jun’s results

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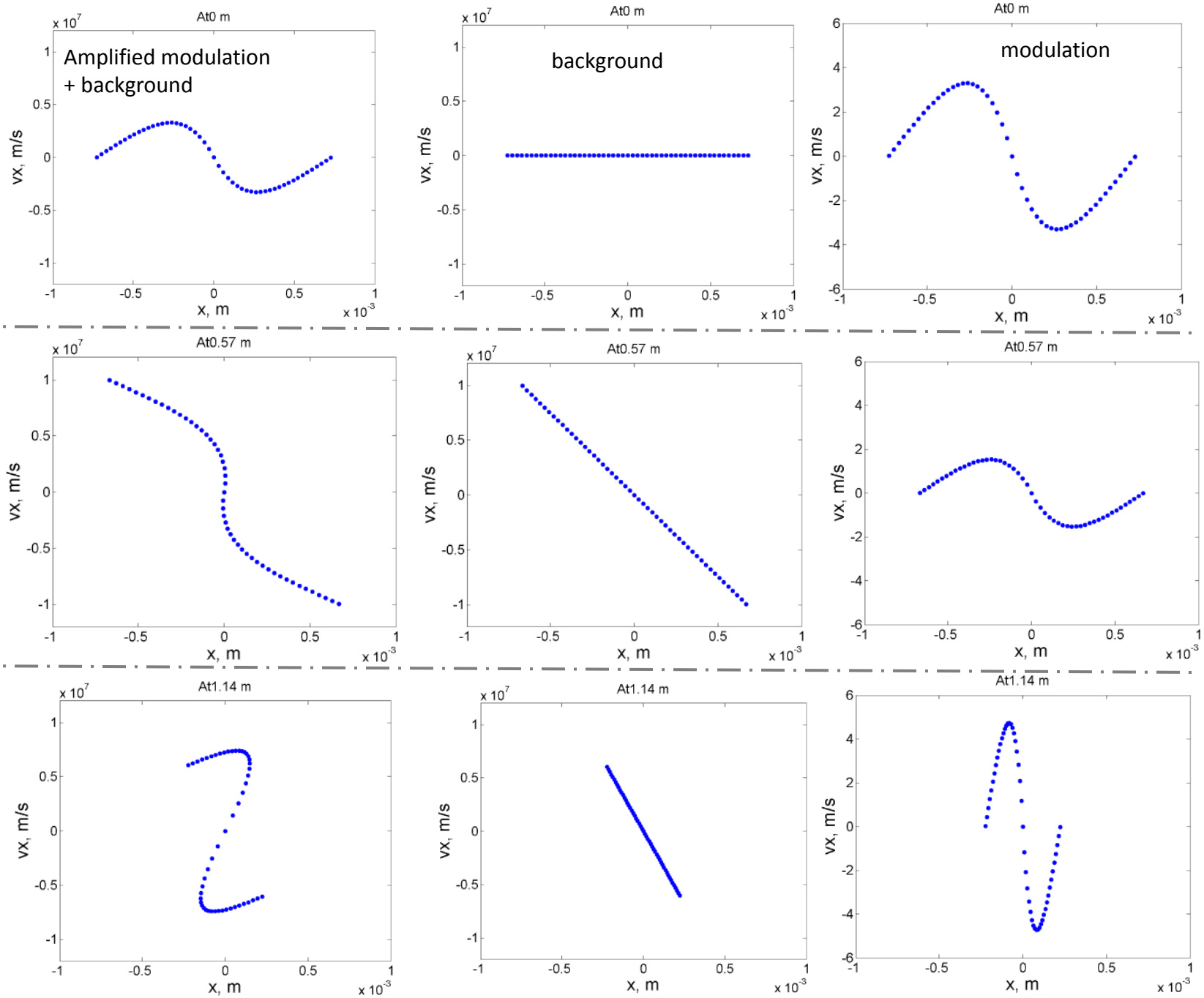
Initial

After Q1

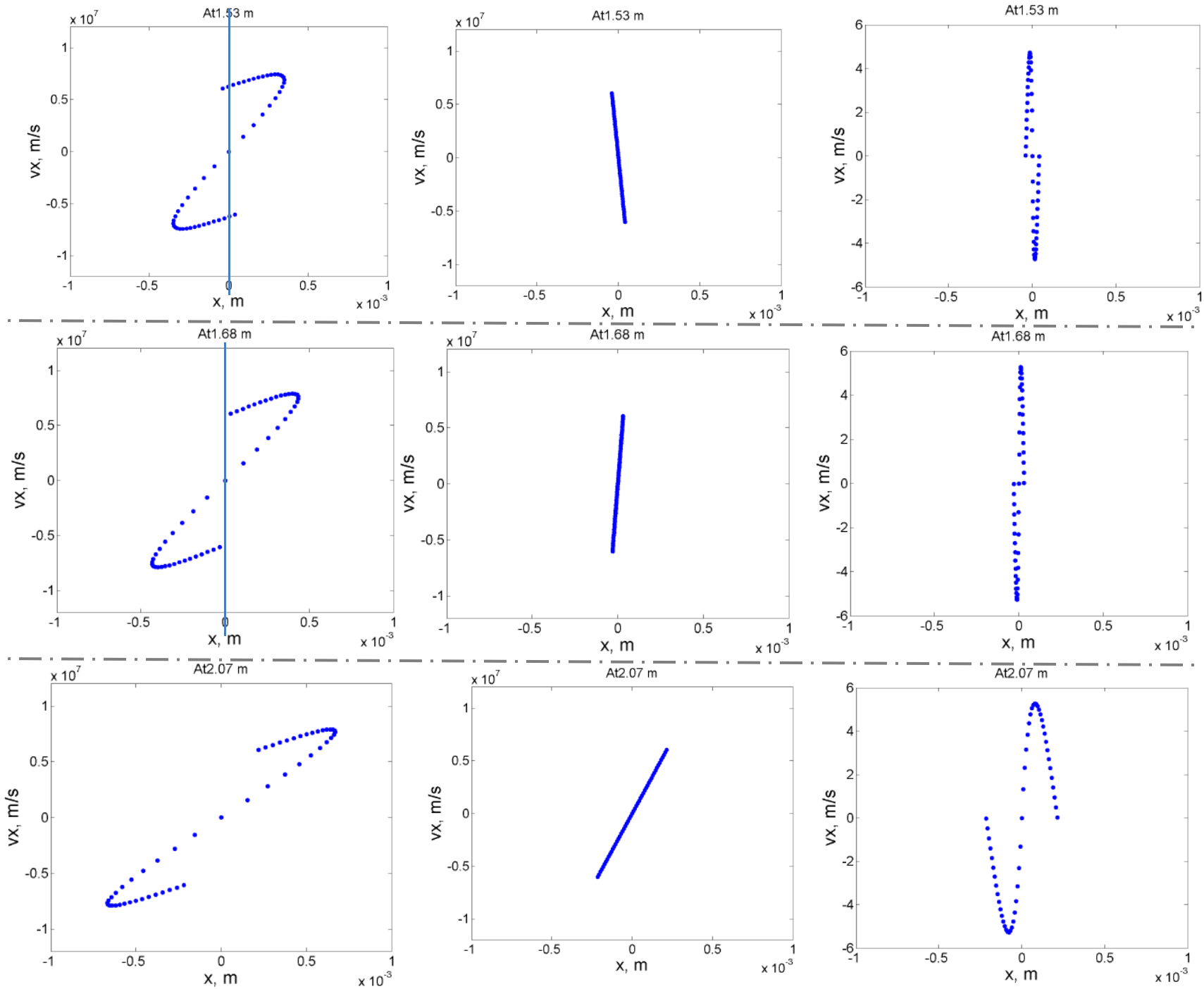
After Q2



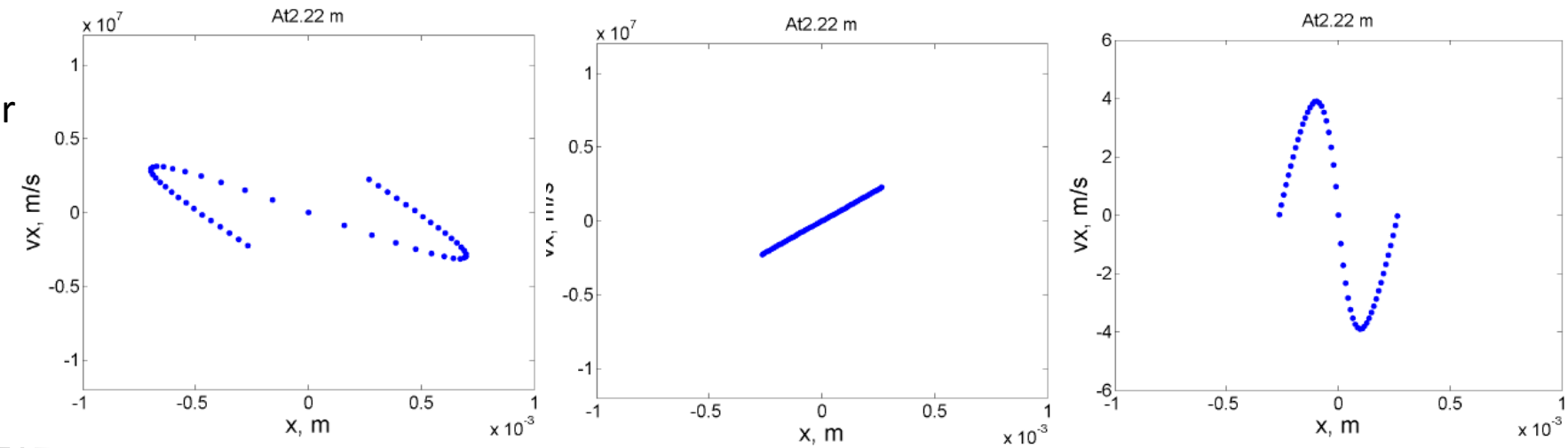
Before Q3

After Q3

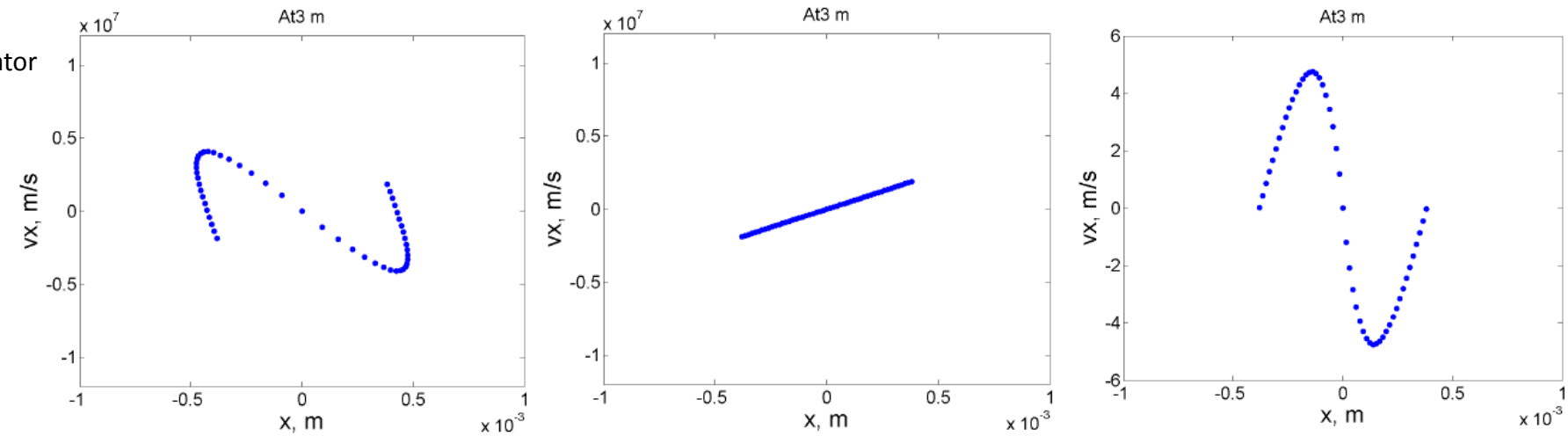
Before Q4



After Q4



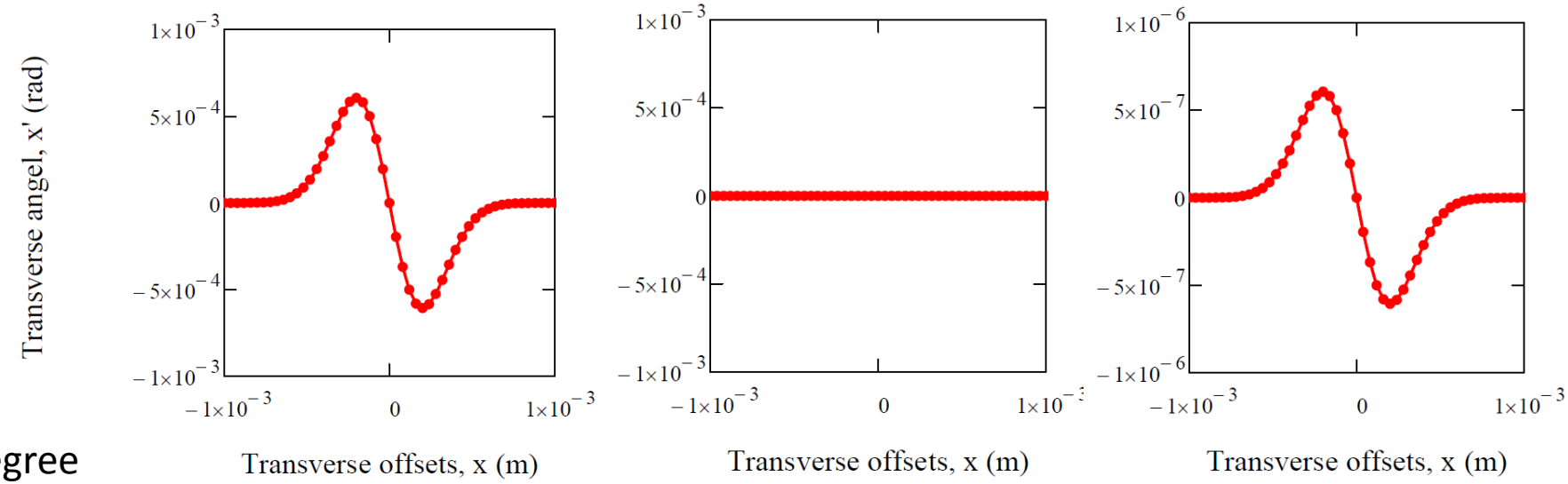
Exit of modulator



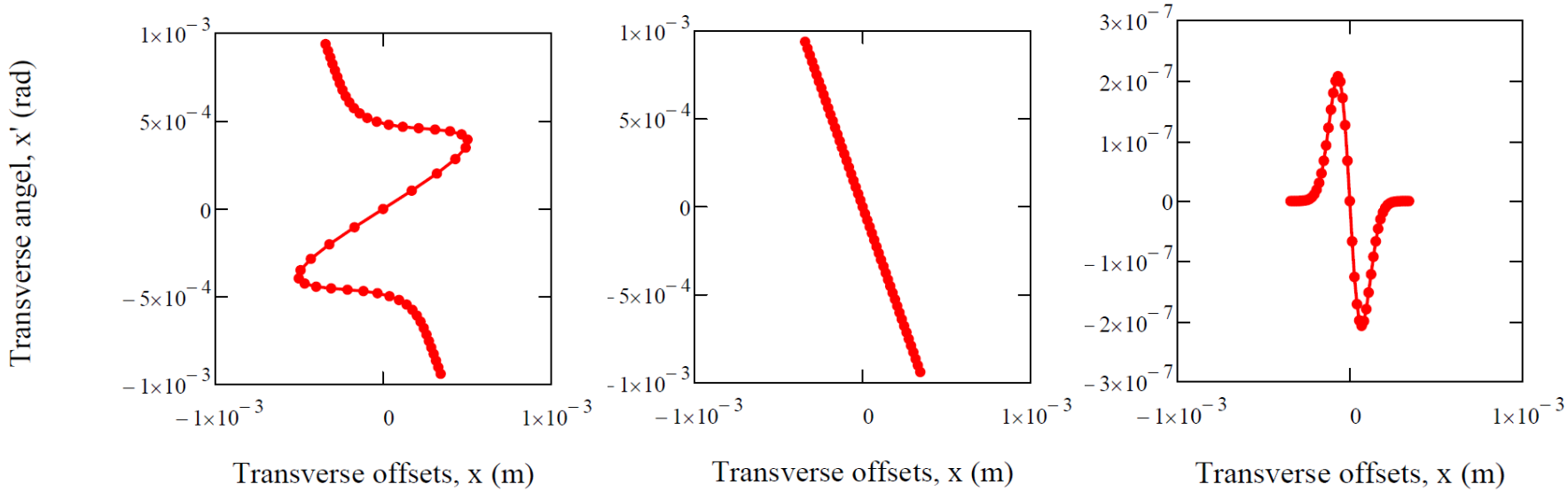
- Combination of phase space rotation and distortion of the beam shape in phase space are responsible for the change of the slope in transverse velocity modulation
- Such reverse of slope will not likely be observed in continuous focusing channel where the shape of the beam in phase space is maintained and only rigid rotation is present.

Continuous focusing (theoretical)

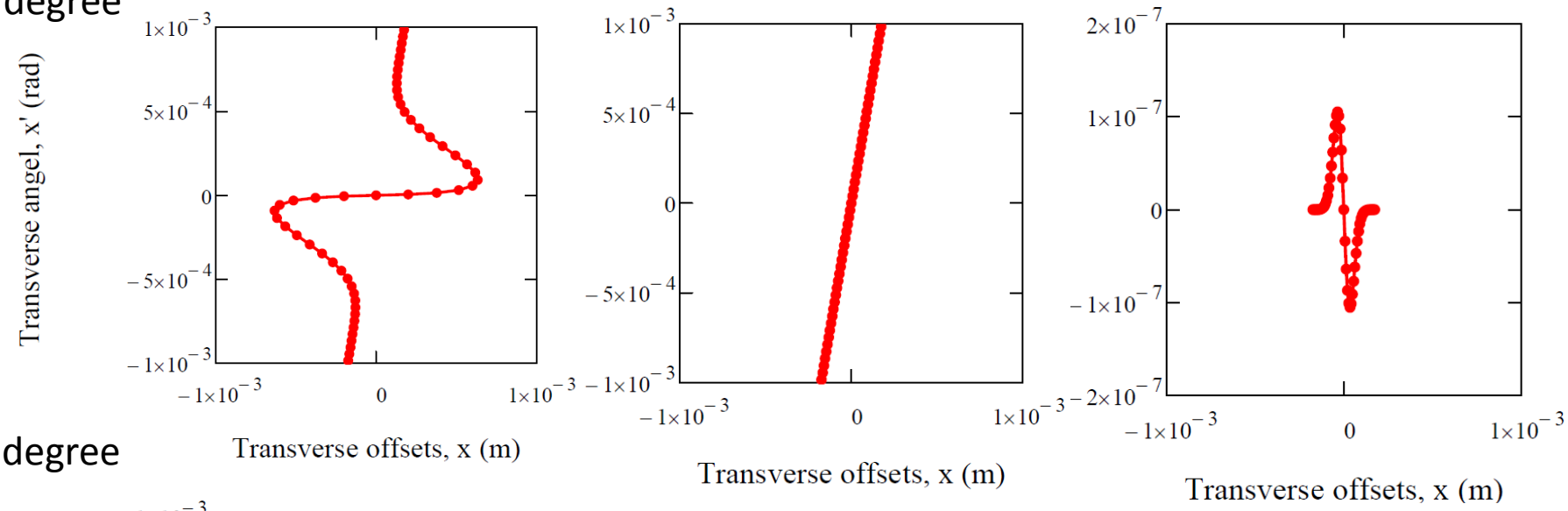
0 degree



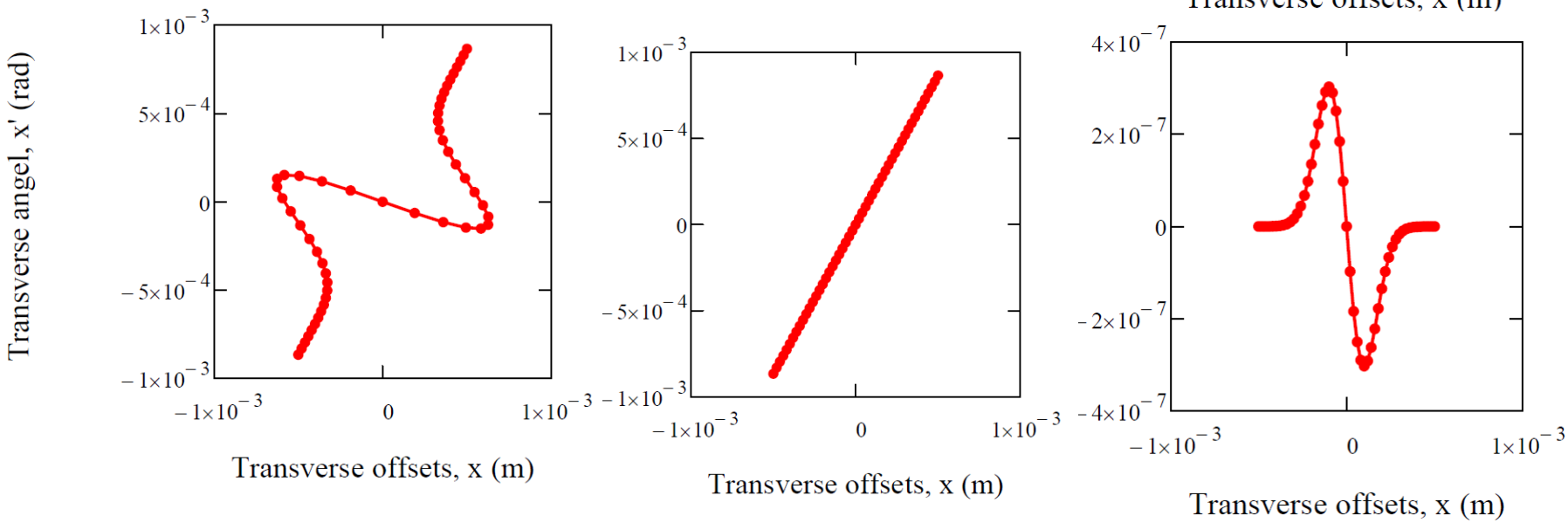
70 degree



100 degree



120 degree



Summary

- Combination of phase space rotation and distortion of the beam shape in phase space are responsible for the change of the slope in transverse velocity modulation
- Such reverse of slope will not likely be observed in continuous focusing channel where the shape of the beam in phase space is maintained and only rigid rotation is present.
- The final slope is still not explaining the observed results for full beam simulation and one possible reason is that space charge reduce the phase advance in betatron motion. Jun is trying to test it with 'marked particles' in the full beam.