# Transmission with Rotation blocks : analytical solution

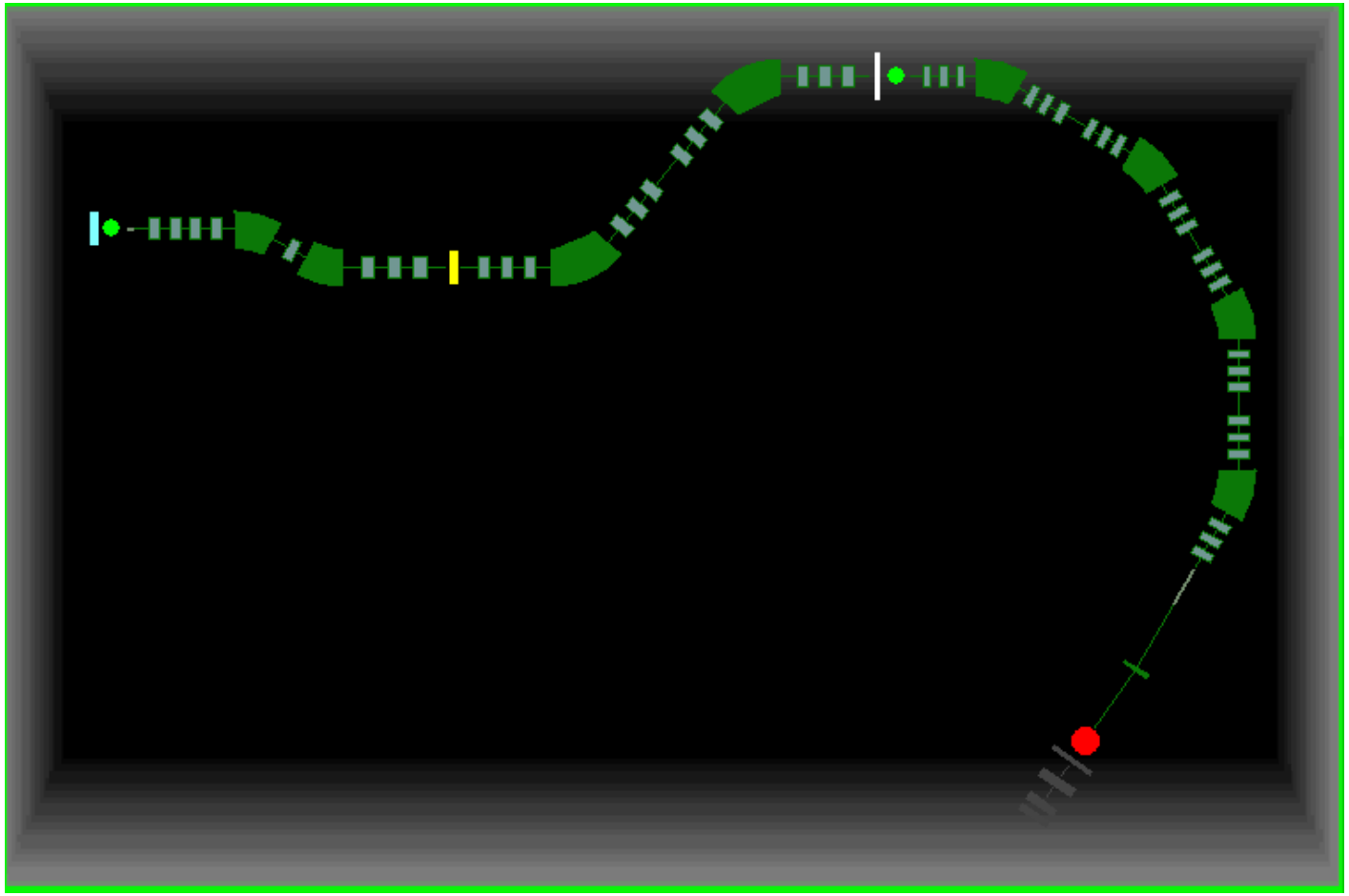
http://lise.nscl.msu.edu/10_0/rotationTest.lpp

LISE$^{++}$ version
10.0.45

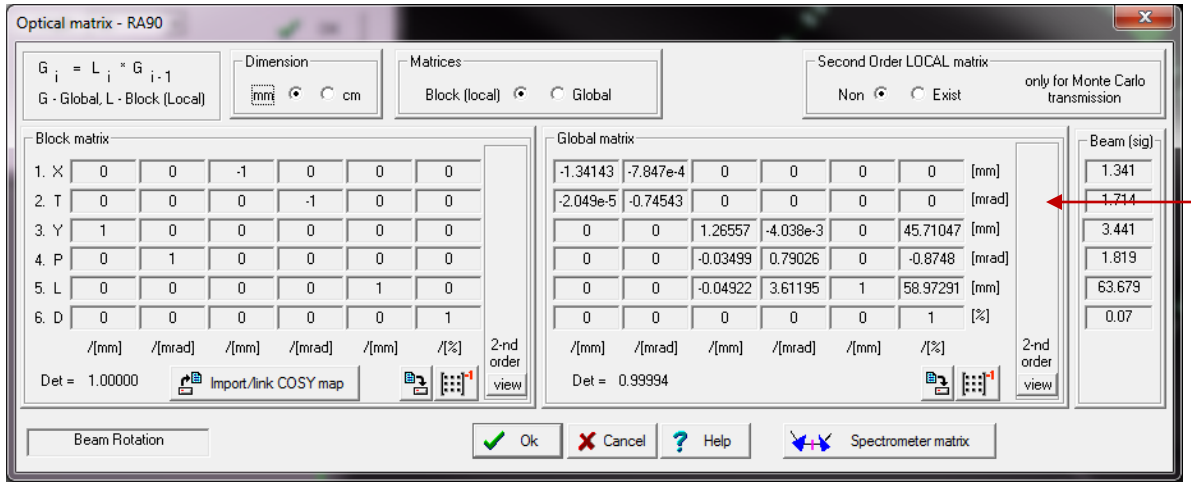
New internal optical block matrix :

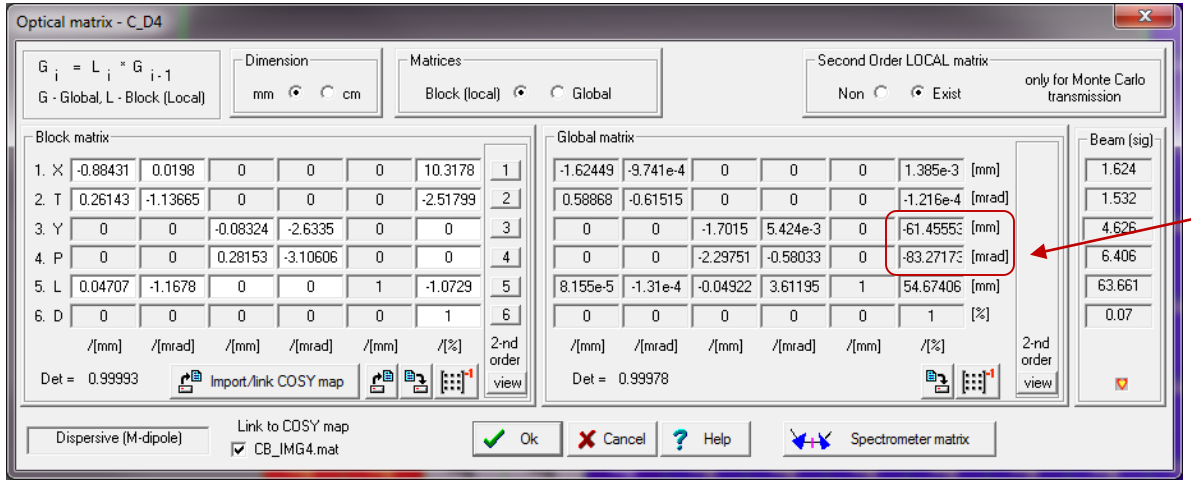
*Global Rotated*

**(Global matrix relatively absolute 0-rotation angle)**



# Local & Global dispersions in LISE$^{++}$




In the momentum compression mode, LISE$^{++}$ shows non-zero vertical global dispersion.. But! LISE$^{++}$ uses in both Monte-Carlo and Distribution methods only local dispersions!!!

# Symmetrical emittance

| | | | |
|---|---|---|---|
| 1. X | mm | 1 | Gaussian |
| 2. T | mrad | 2.3 | Gaussian |
| 3. Y | mm | 1 | Gaussian |
| 4. P | mrad | 2.3 | Gaussian |
| 5. L | mm | 63 | Gaussian |
| 6. D | % | 0.07 | Gaussian |

Benchmark: *final transmission value and envelope plots should not be depended from the rotation block in front of separator in the case of symmetrical beam emittance.*



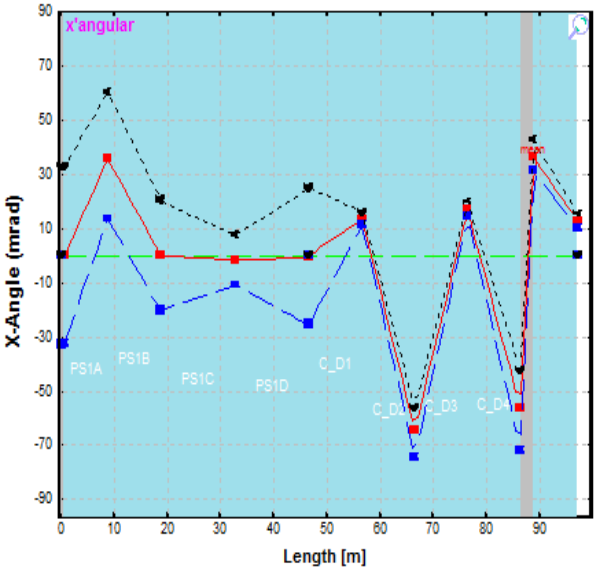
It will be useful to benchmark with the extended configuration

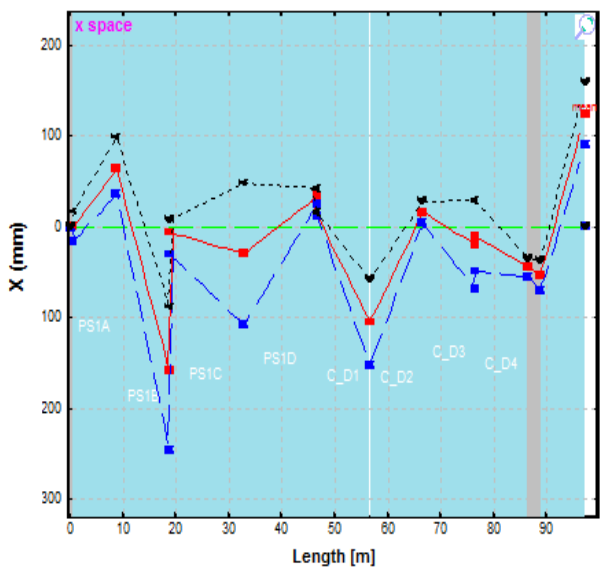
# Benchmarks : rotation blocks 0 & 90 degrees

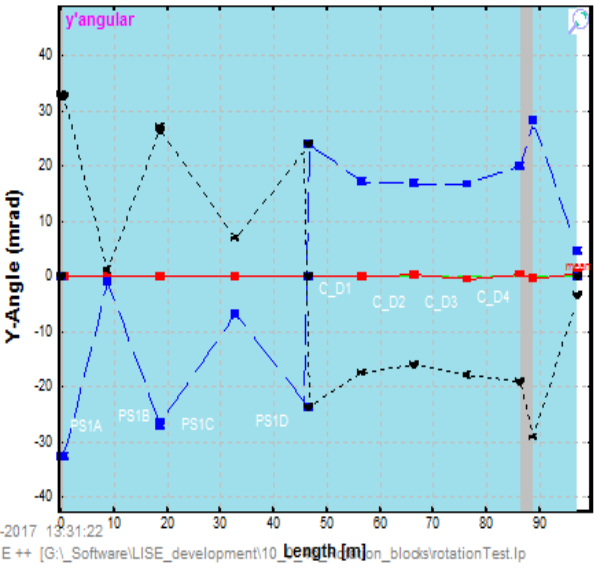
0

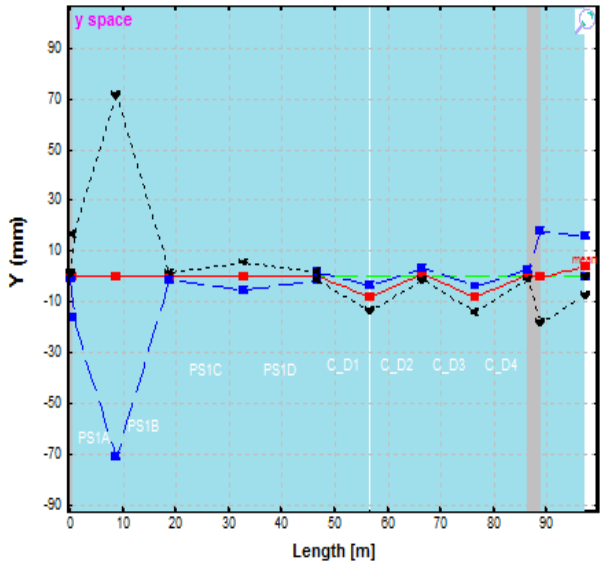
RAm90 Angle 0 deg

Transmission 0.009%

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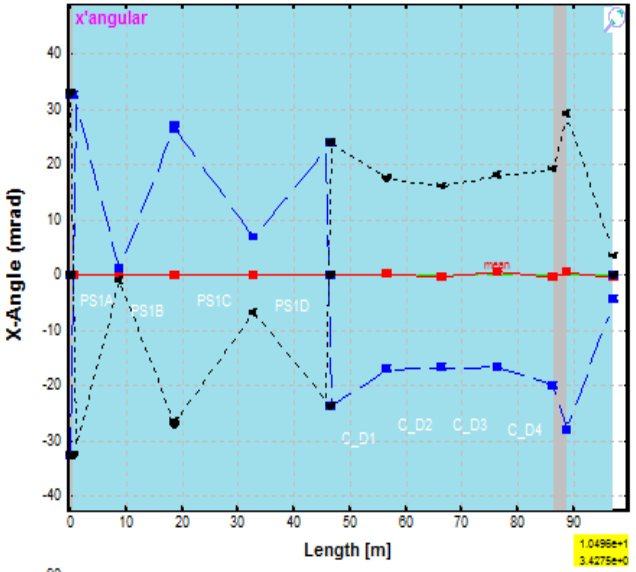
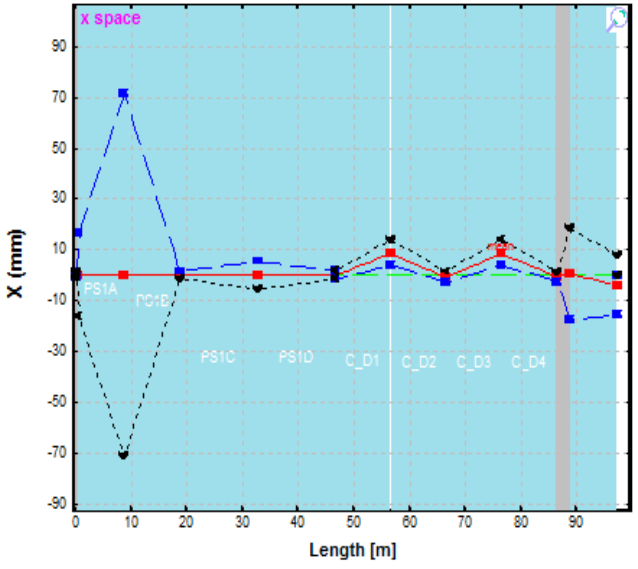
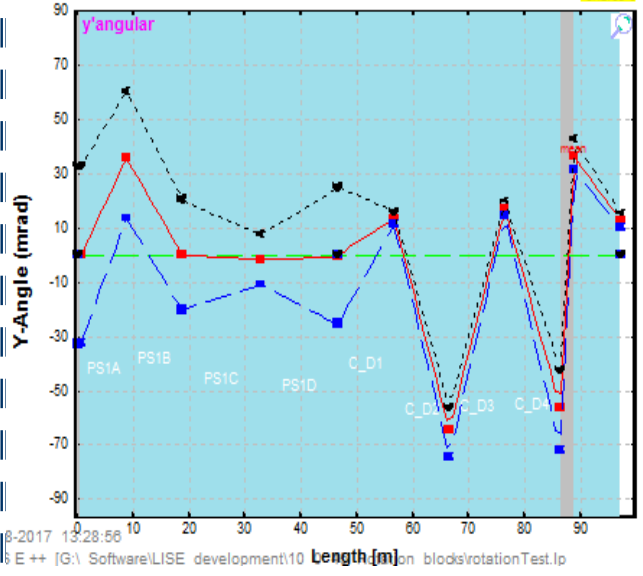
90

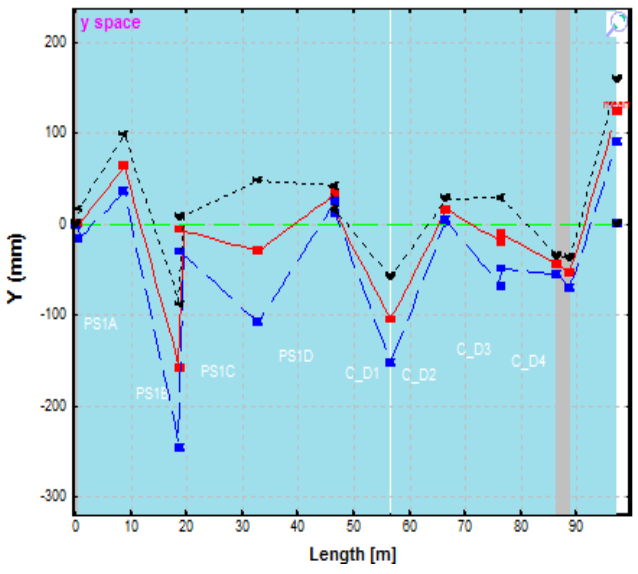
RAm90 Angle 90 deg

Transmission 0.009%

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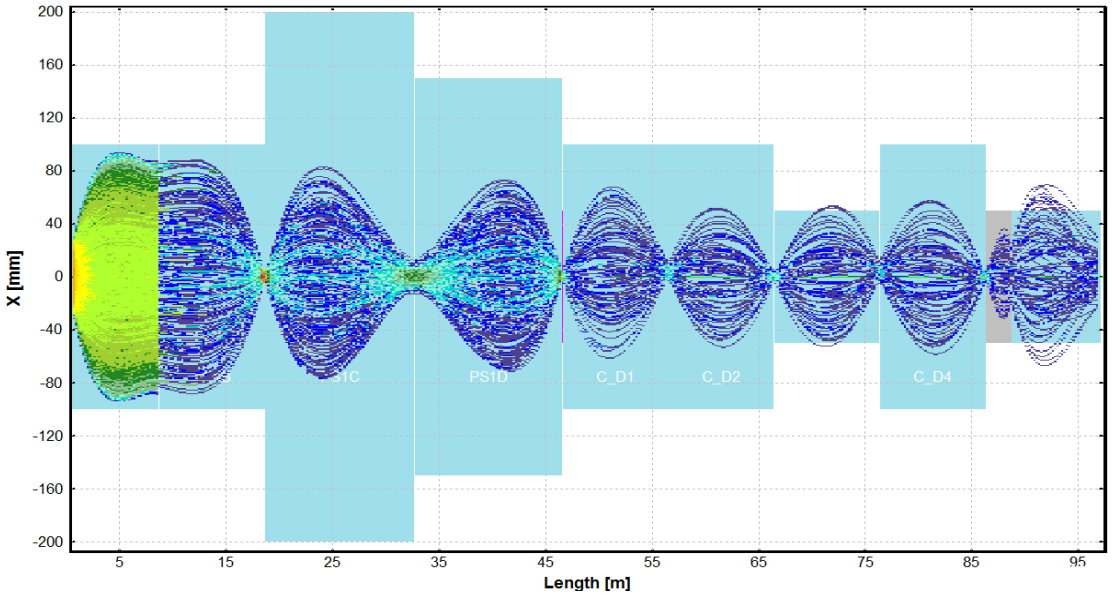
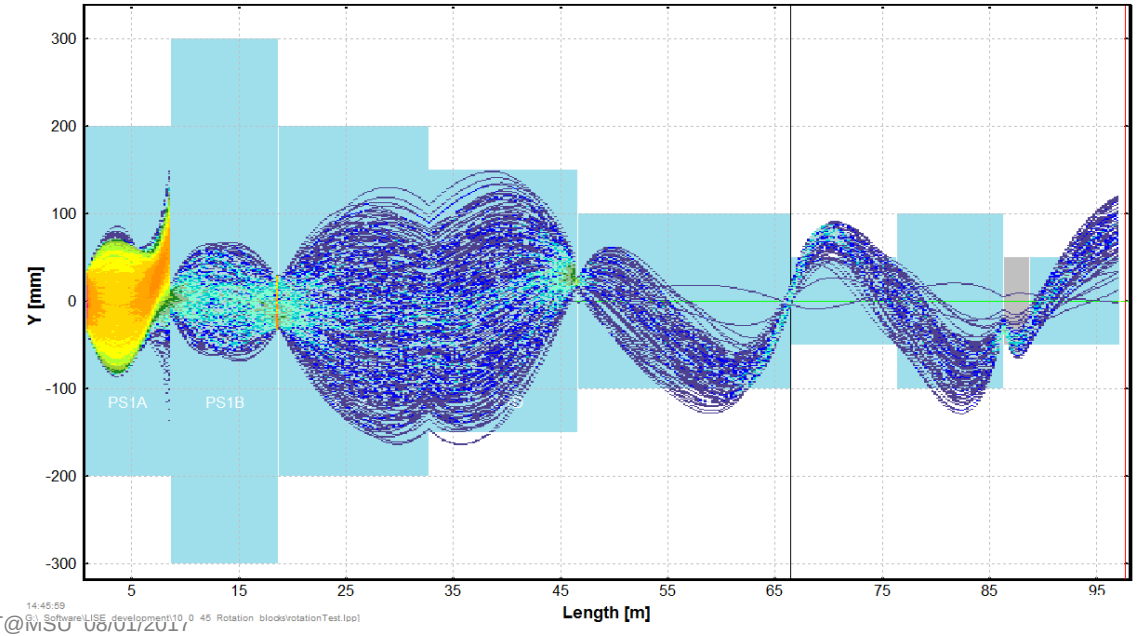
# Benchmarks for rotation block 90 degrees : MC & Distr

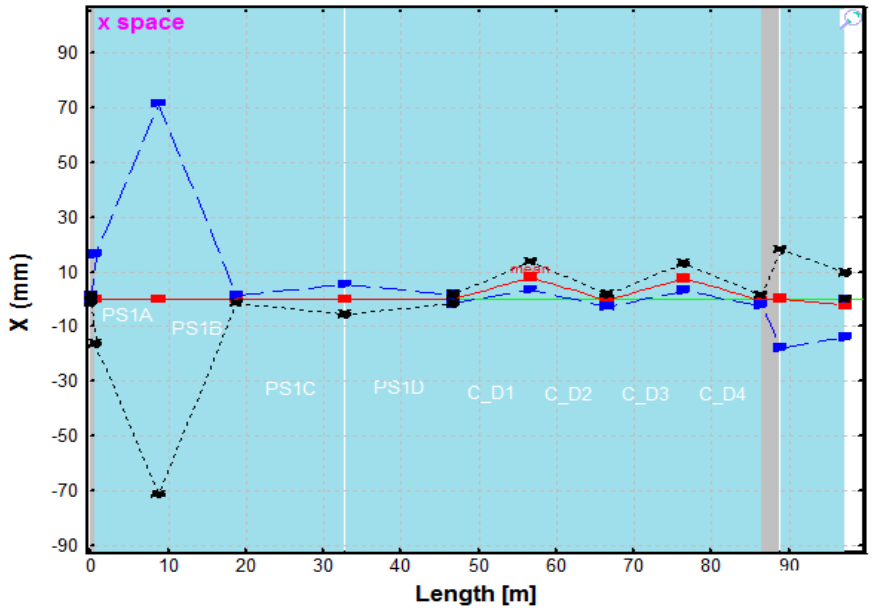
## Monte Carlo

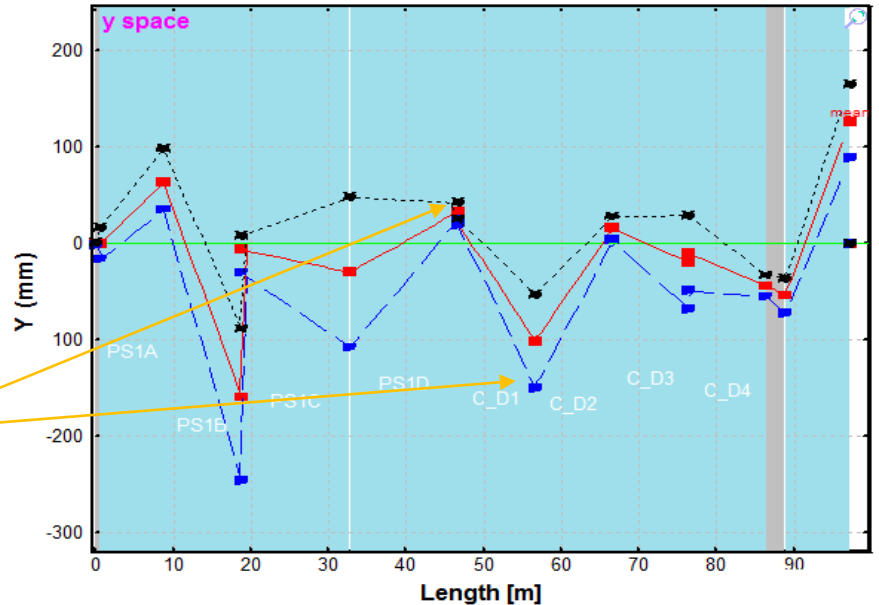



RAm90 Angle 90 deg

## Distribution




YY= -4