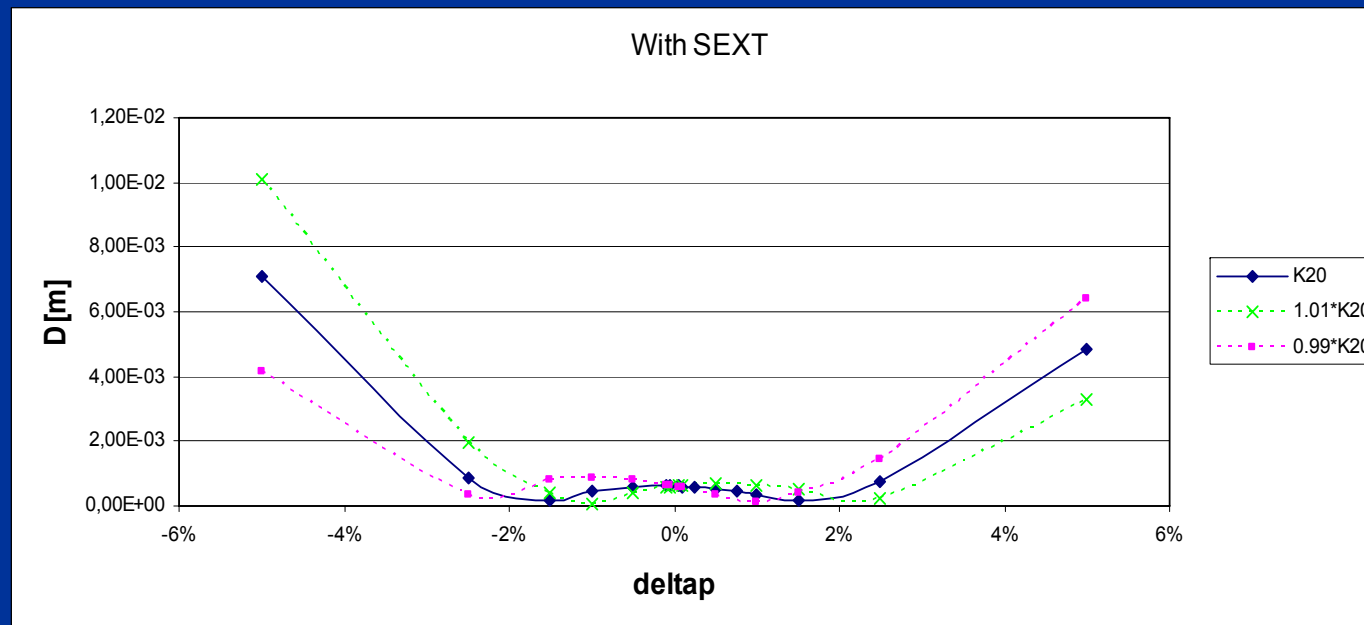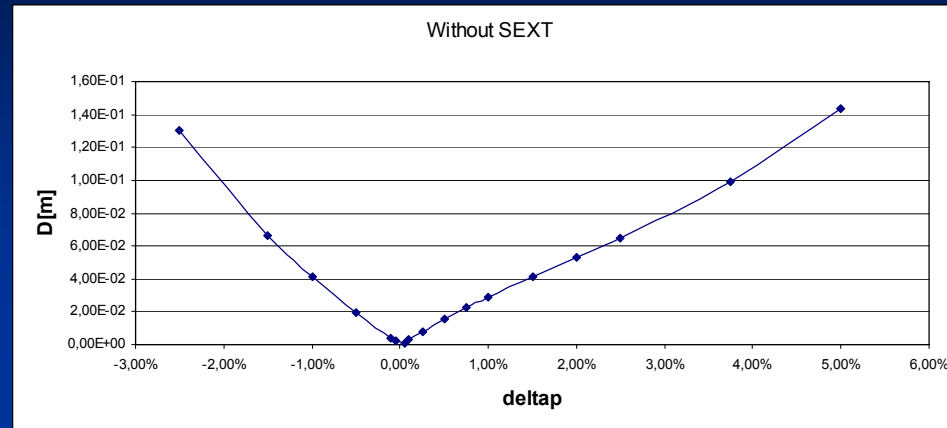# New Results from TTF2 Dog-leg Dispersion

Eduard Prat

XFEL Beam Dynamics Meeting, 14 November 2005
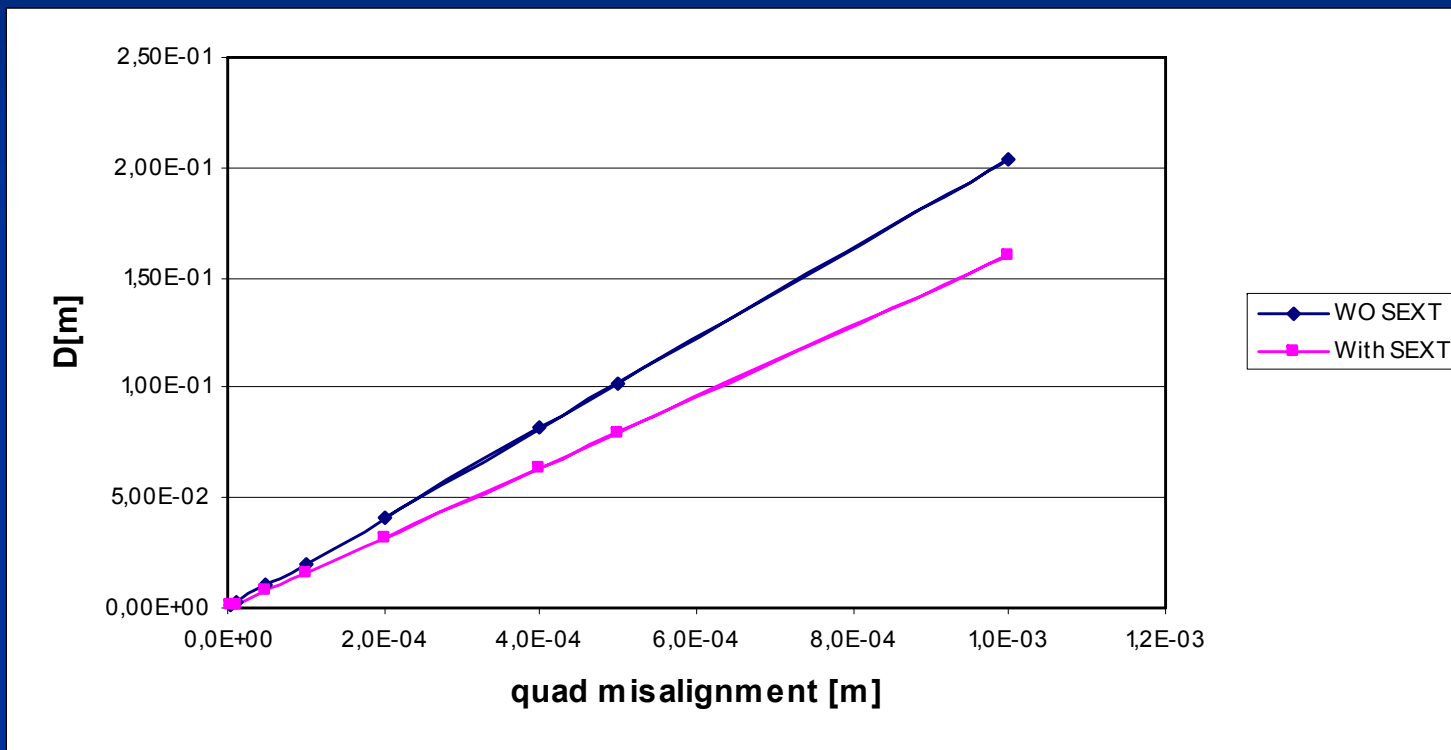
# Procedure

- 100 simulations for each calculation

- Dog-leg: 4 quads (Q3ECOL, 2*Q4ECOL, Q5ECOL), 2 bending magnets (CD1ECOL. CD7ECOL), 2 sextupoles (S2ECOL, S6ECOL)

- Misalignment errors as well as field errors affect only the magnets in the dog-leg

- Any kind of off-set refers at the beginning of the dog-leg

- Dispersion measured at 4 BPM's after the dog-leg :

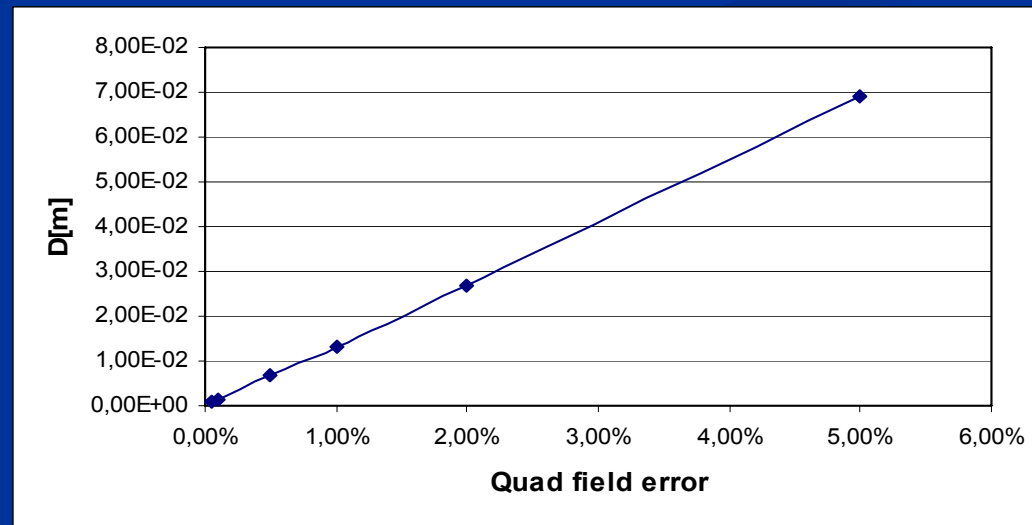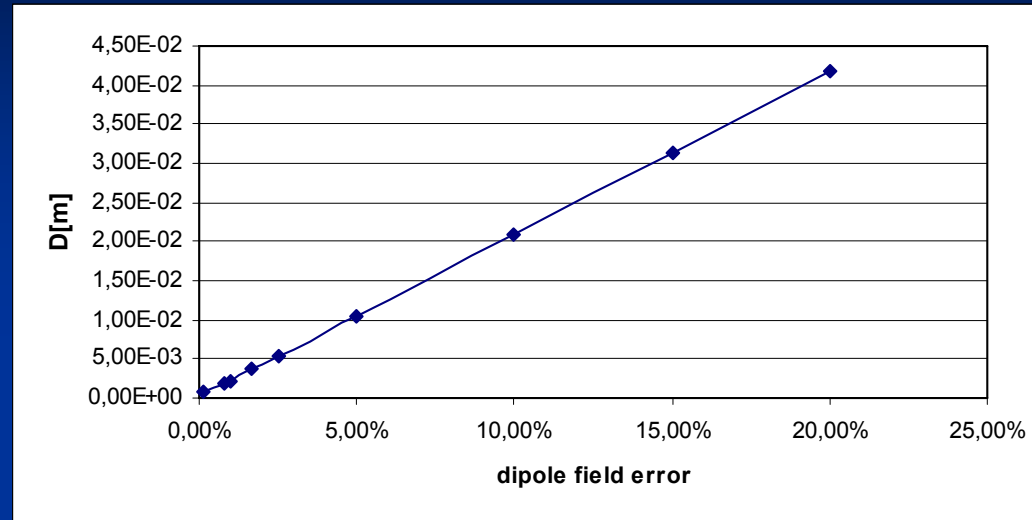  BPM4SUND2, BPM3SEED, BPM12SEED, BPM20SEED
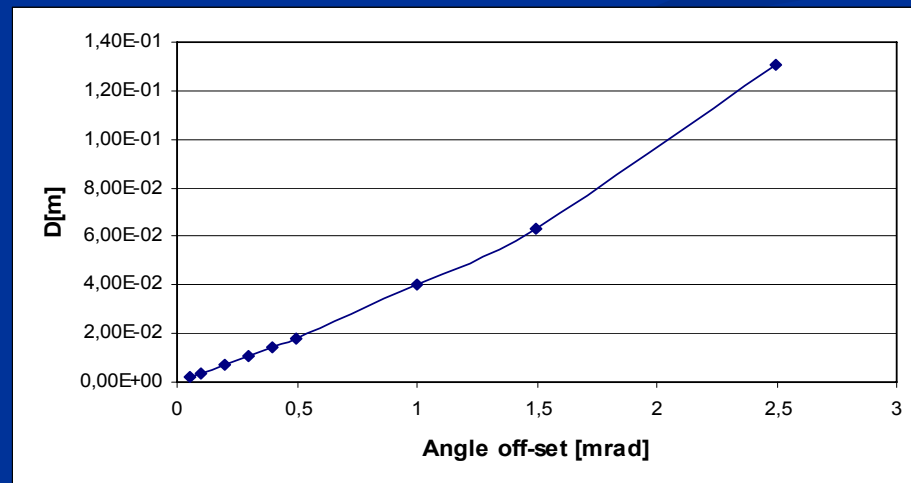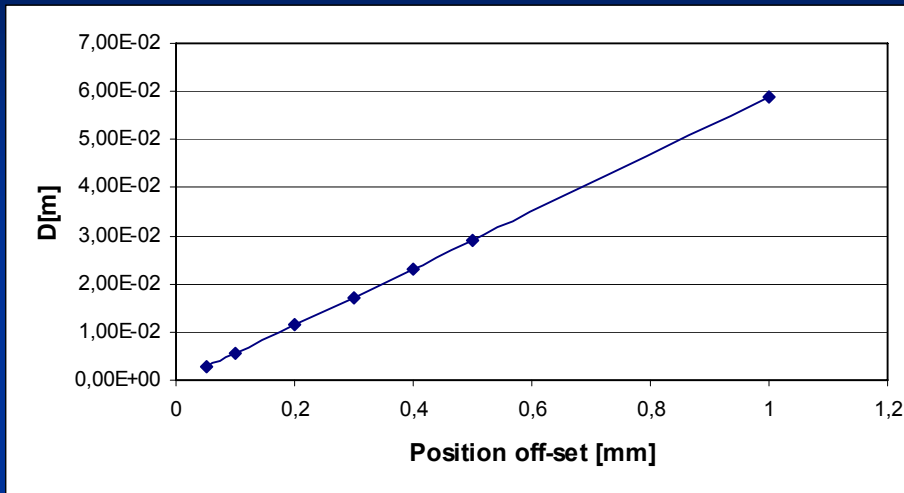
# Dispersion vs E off-set

# Dispersion vs Quad misalign

# Dispersion vs Field Errors

# Dispersion vs Orbit off-set

# Summary

| Source | Error (only in the dog-leg) | Dispersion (after the dog-leg) |
|---|---|---|
| *Energy off-set* | 6.5% | |
| *Quad malign* | 50 um | |
| *Dipole field error* | 5 % | ~ 1cm |
| *Quad field error* | 0.75 % | |
| *Position off-set* | 0.2 mm | |

# Summary

| Source | Error (only in the dog-leg) | Error (in all the lattice) | Dispersion (after the dog-leg) |
|---|---|---|---|
| *Quad malign* | 50 um | 17 um (equivalent to 0.4 mm rms orbit in the quads) | ~ 1cm |
| *Dipole field error* | 5 % | 0.25 % | |
| *Quad field error* | 0.75 % | 0.75 % | |

Thank you!