

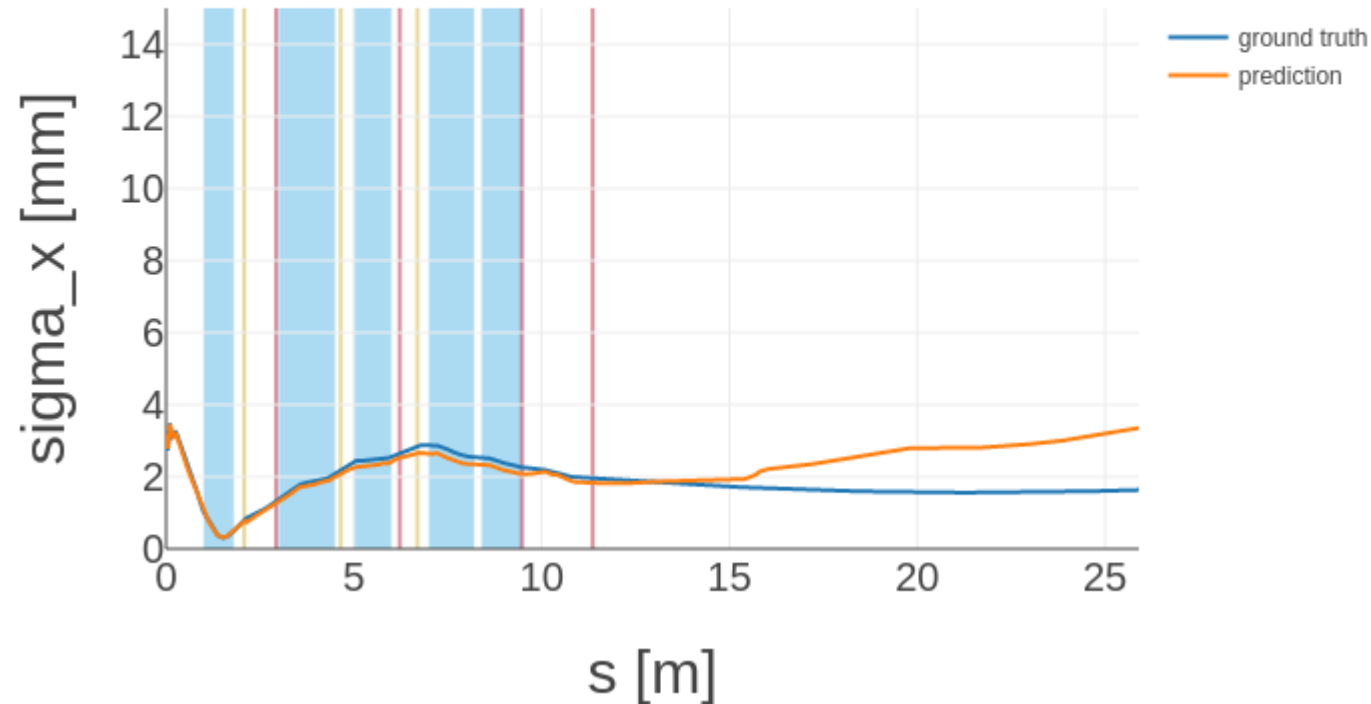
Update: Surrogate Model

2020-02-07

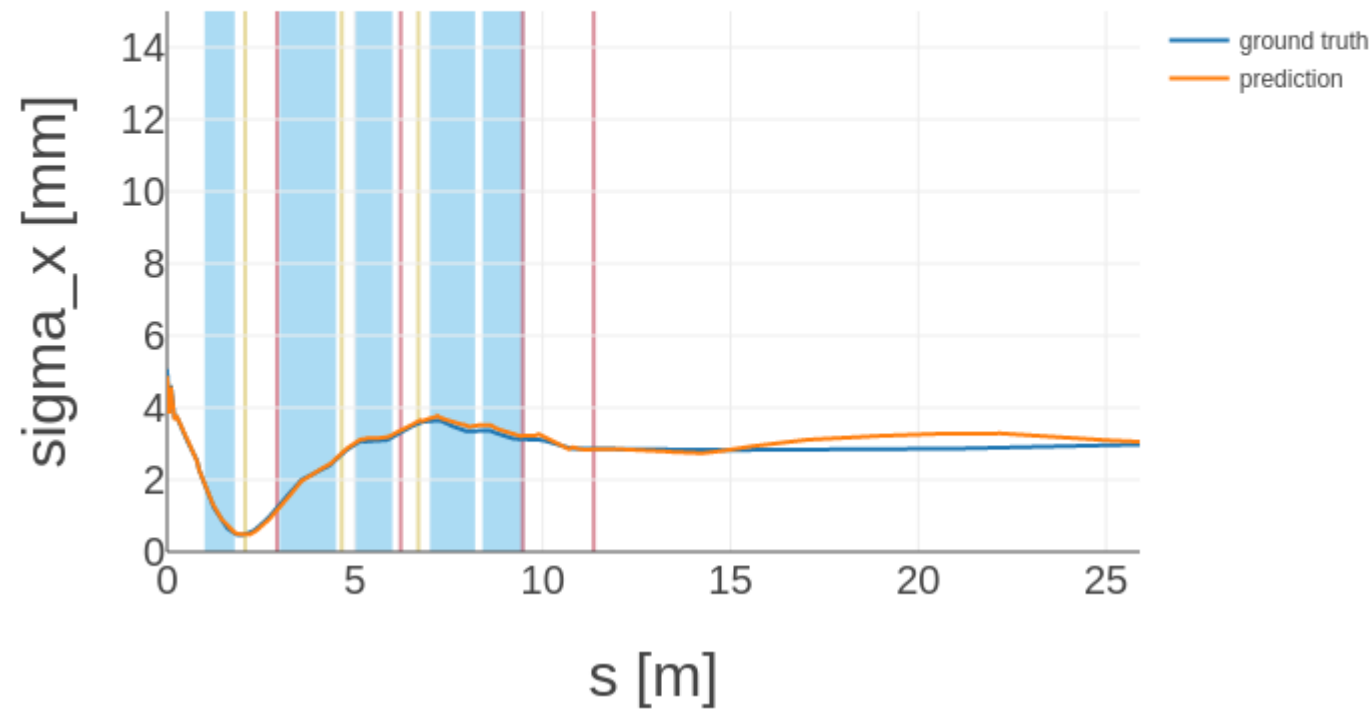
Renato Bellotti

Model range: 0 to 26m

- Qualitative behaviour still good:
Good agreement with OPAL
- Not as good as before
- Probably because smaller dataset was used

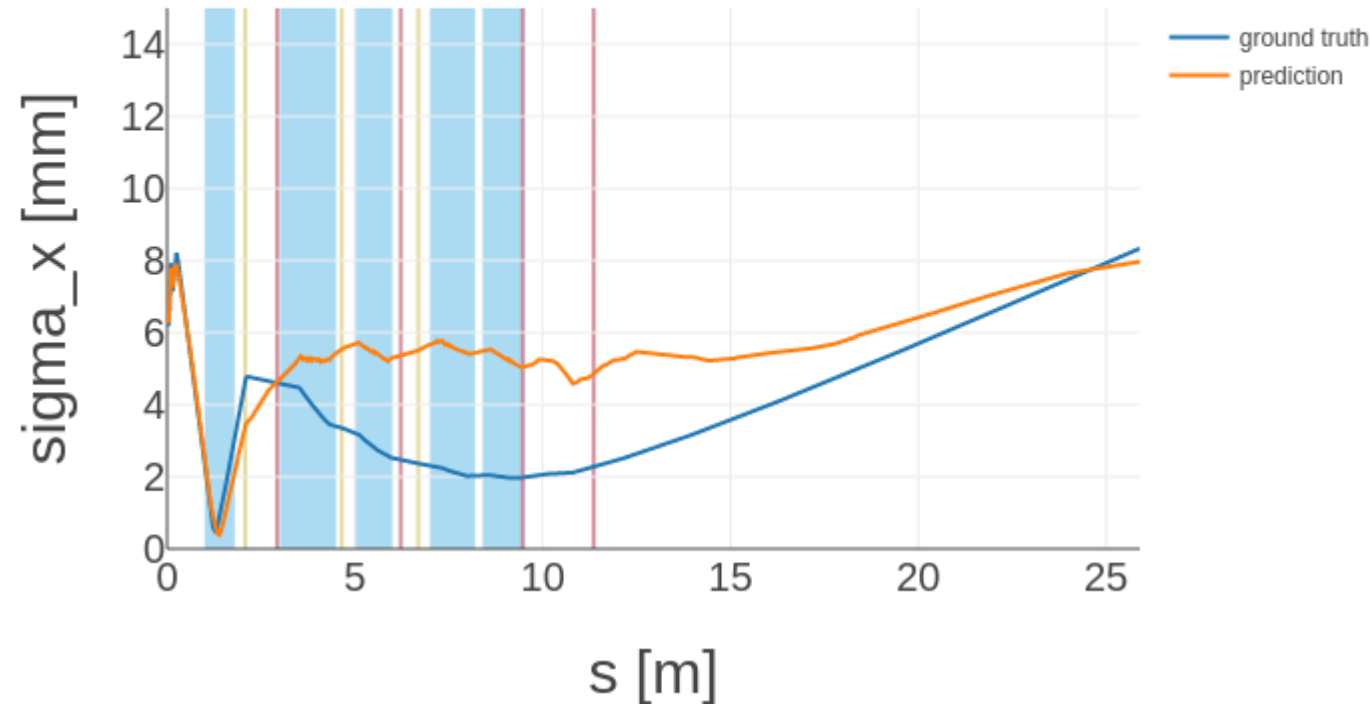


IBF	450.0
IM	231.7
GPHASE	-29.3
ILS1	232.0
ILS2	50.9
ILS3	185.6
bunchCharge	3.8
cavityVoltage	19.8
SIGXY	6.6
sample_id	129.0



IBF	515.1
IM	162.9
GPHASE	-32.3
ILS1	199.9
ILS2	97.9
ILS3	168.8
bunchCharge	3.6
cavityVoltage	21.7
SIGXY	10.2
sample_id	64.0

Most machines are diverging...



IBF	461.2
IM	259.9
GPHASE	3.5
ILS1	240.7
ILS2	43.8
ILS3	8.1
bunchCharge	1.4
cavityVoltage	16.8
SIGXY	12.4
sample_id	72.0

Optimisation

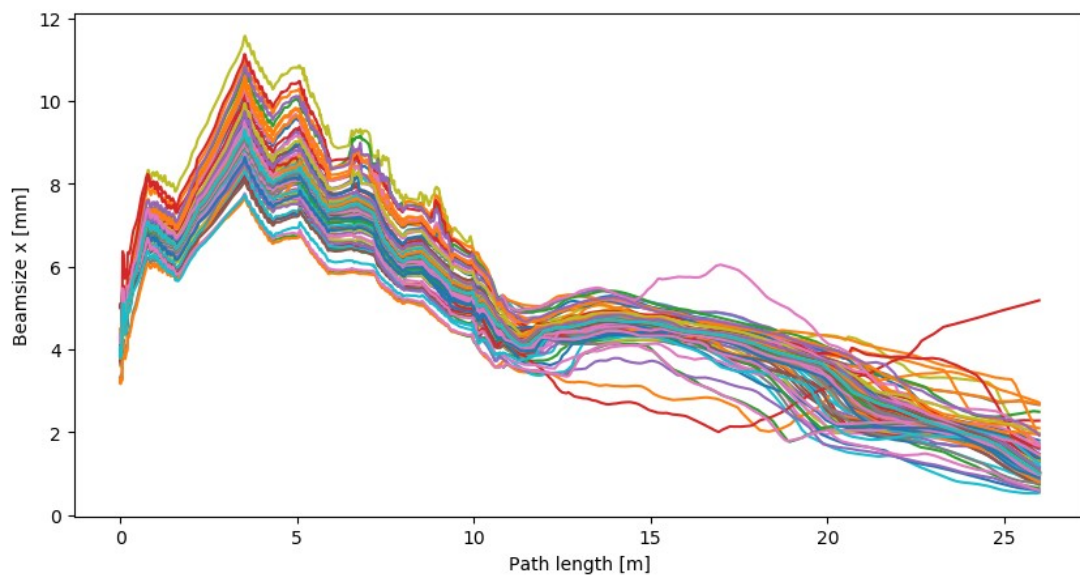
- Constraints:

$$4\text{mm} \leq \sigma_x(s) \leq 10\text{mm} \quad \text{for } s = 0.0, 0.1, \dots, 14.9\text{m}$$

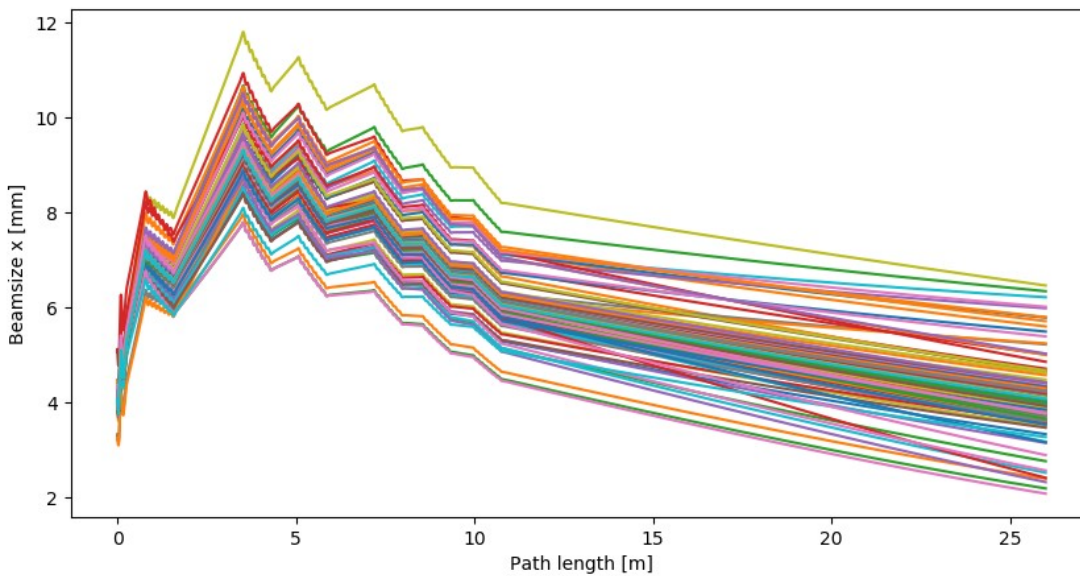
$$\text{corr}(x, p_x) \leq 0 \quad \text{at } s = 26\text{m}$$

- Minimize:

$$|\sigma_x(26\text{m}) - 1\text{mm}|$$



Predicted by the surrogate model
(optimal configurations only)



Evaluated with OPAL
(optimal configurations only)