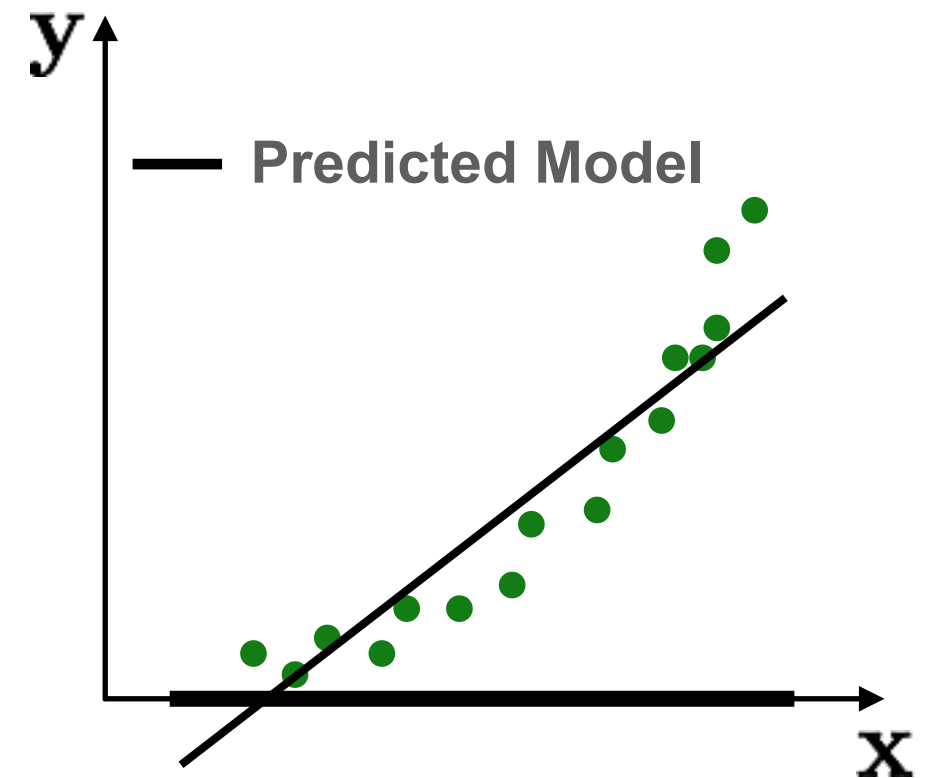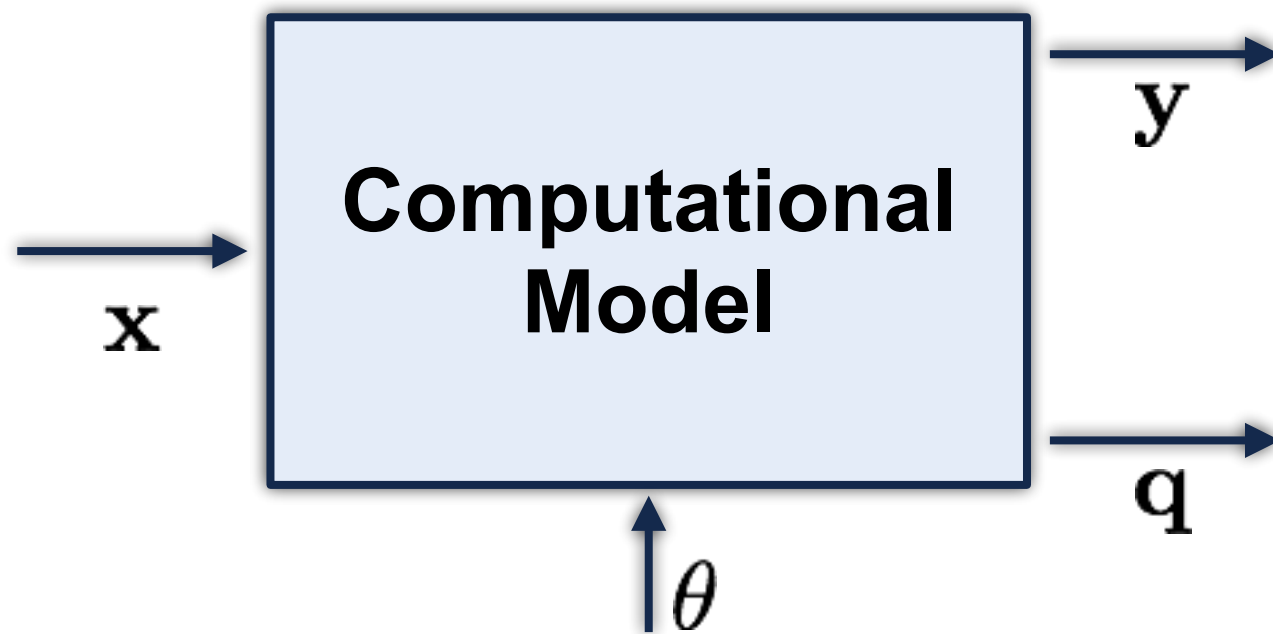# Classic Approach to Validation

One approach [2] for taking into account the uncertainties on the predictions relies on "appending" a statistical model directly to the observable quantities:

Classic Approach to Validation

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Hyperparameter α

Non-Deterministic Model $\quad \boxed{\sigma_y(\mathbf{r}; \alpha)}$

$\mathbf{D}$

$\bar{\mathbf{y}} \quad\quad \mathbf{y} \quad\quad \epsilon$

Computational Model

$\mathbf{x}$

$\mathbf{q}$

θ

$$\mathbf{y} = \bar{\mathbf{y}} + \mathcal{N}(\mathbf{0}, \sigma^2)$$

Hyperparameter to be Calibrated

y

······ Predicted Model $\pm 3\sigma$
—— Predicted Model

$\mathbf{x}$