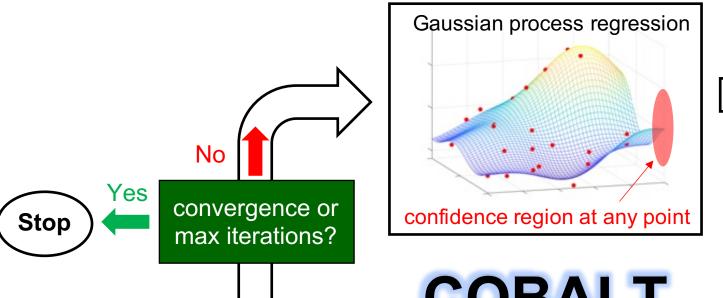
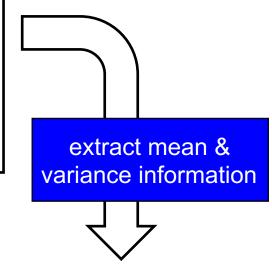
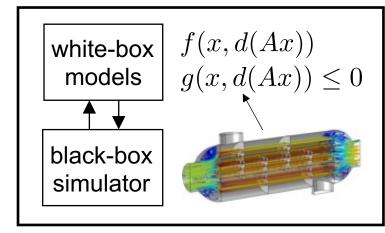
## Probabilistic surrogate model for $d(\cdot)$

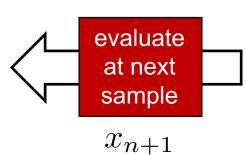




## COBALT



**Expensive "grey-box" model** 



Scaled expected utility function to tradeoff exploration & exploitation  $\min \mathbb{E}_n\{f(x,d(Ax))\} - s_n\alpha_n(x)$ 

s.t.  $\mathbb{P}_n\{g(x,d(Ax))\leq 0\}\geq 1-\epsilon$  $x \in \mathcal{X}$ 

**Constrained acquisition optimization**