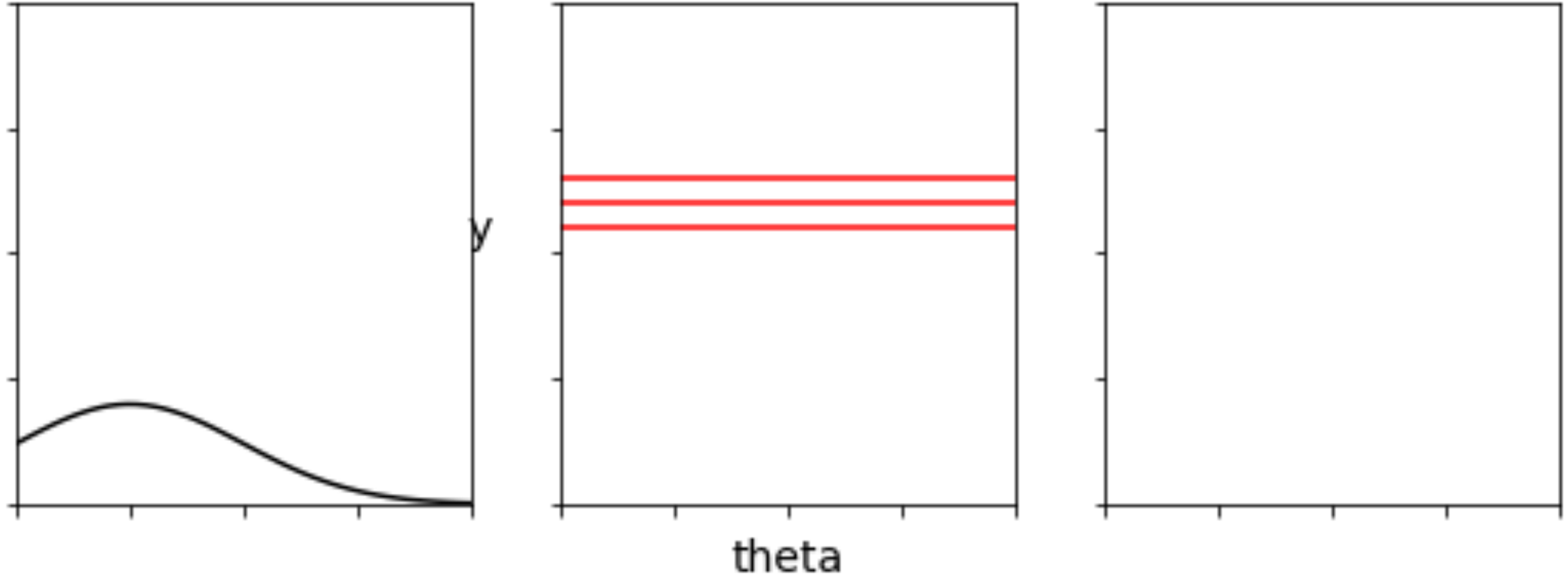
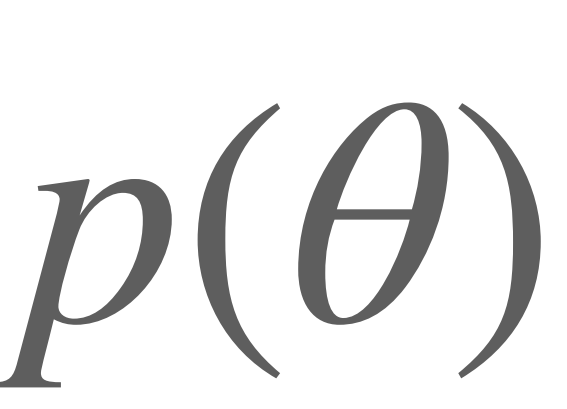
Rejection Approximate Bayesian Computation

(ABC)


y
theta


$p(\theta)$

$$p(x \mid \theta)$$

$$\approx p(\theta \mid x^o)$$

For $i = 1, \ldots, N$

$\theta^* \sim p(\theta)$

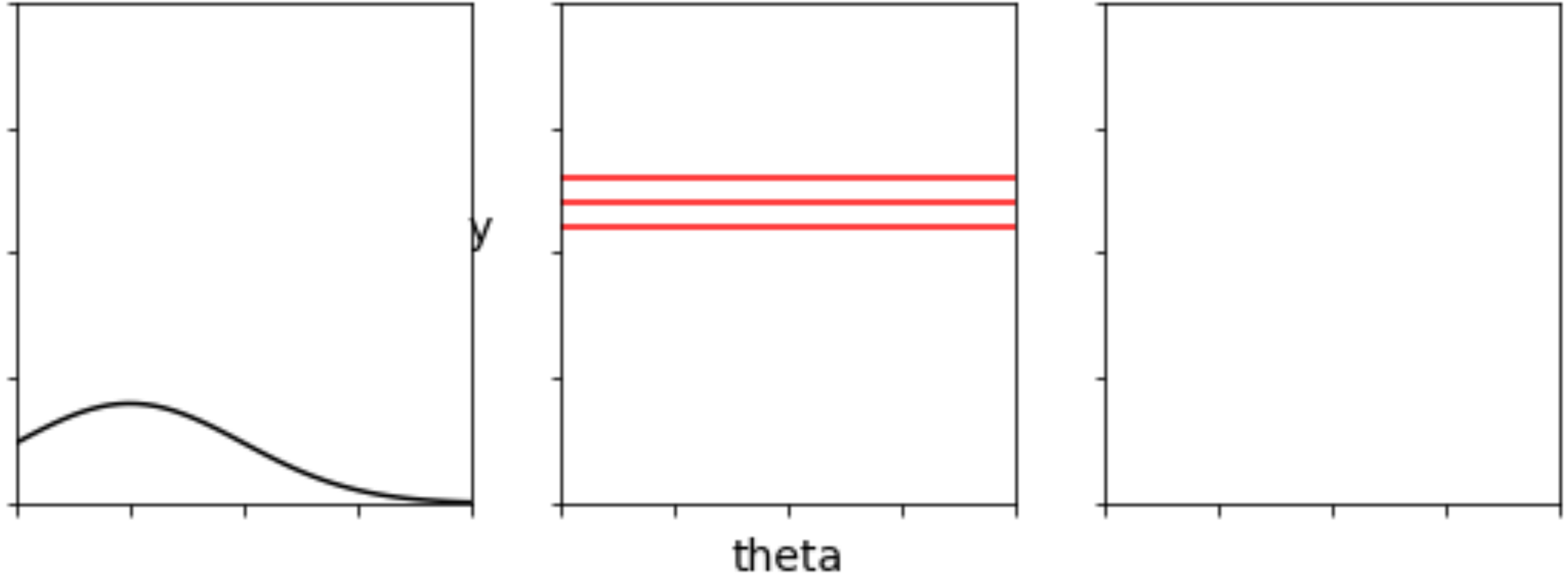
$x^* \sim p(x \mid \theta^*)$

while $d(x^*, x^o) > \epsilon$:

$\theta^* \sim p(\theta)$

$x^* \sim p(x \mid \theta^*)$

set $\theta_i = \theta^*$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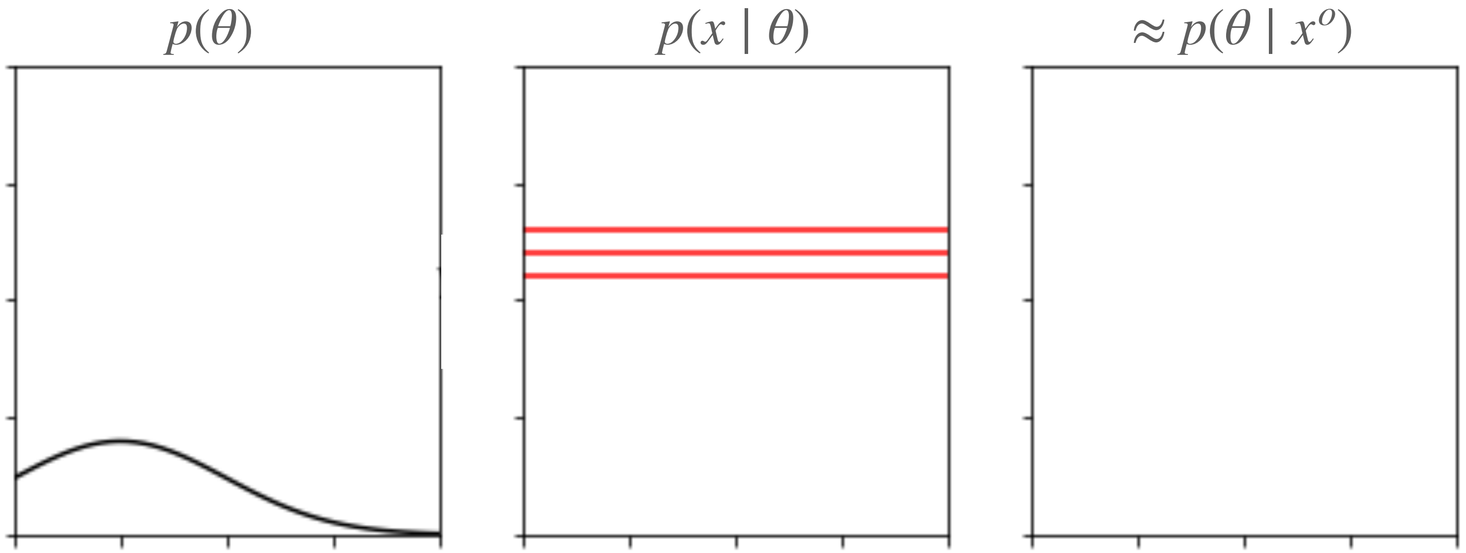

Rejection ABC

Alternative approach

- Instead of choosing a fixed threshold we can instead sample a very large artificial data set and choose a fraction of samples that are most similar to the observed data
- Threshold can then be calculated after the simulation as the largest distance that was still accepted
- The approach can be used in smaller scale to find out reasonable threshold levels for sampling based ABC methods