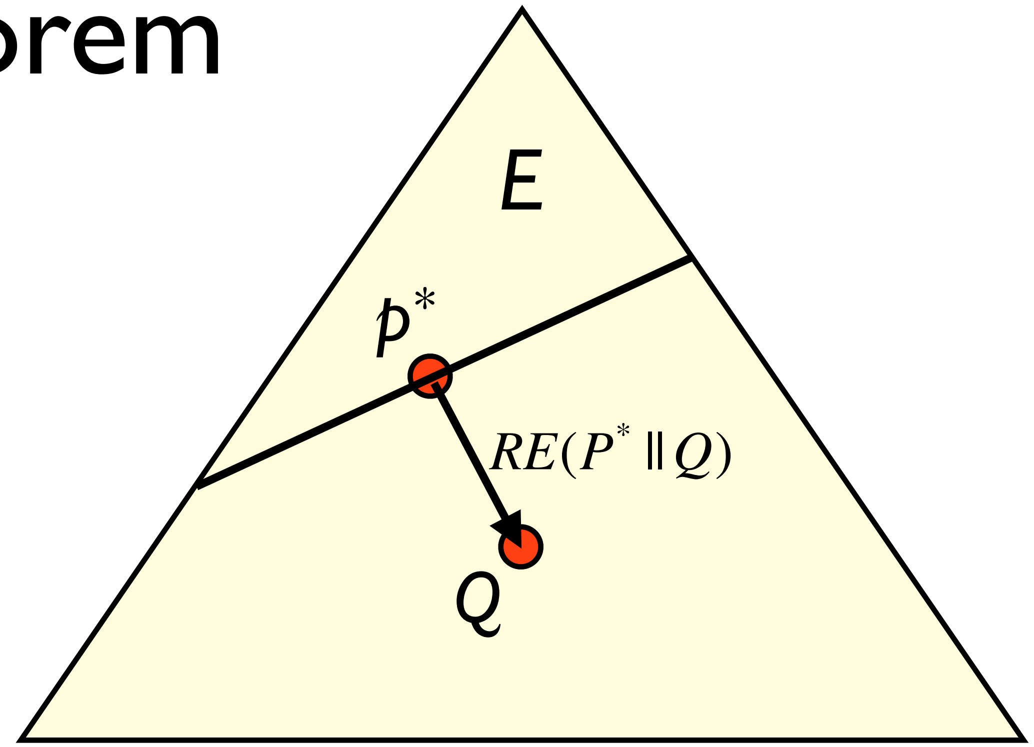
Sanov's Theorem



Let $X_1, X_2, \ldots, X_n$ be iid with empirical dist $Q(x)$

Let $E \subseteq \mathbf{P}$ be a set of probability Distributions over the finite alphabet H. Then

$$Q^n(E) = Q^n(E \cap \mathbf{P}_n) \leq (n+1)^{|H|} 2^{-nRE(P^* \| Q)}$$

Where $P^* = \min_{P \in E} RE(P \| Q)$

Real

$$g(x, y; \lambda, \theta, \psi, \sigma, \gamma) = \exp\left(-\frac{x'^2 + \gamma^2 y'^2}{2\sigma^2}\right) \cos\left(2\pi \frac{x'}{\lambda} + \psi\right)$$

where

$$x' = x \cos\theta + y \sin\theta$$

and

$$y' = -x \sin\theta + y \cos\theta$$

$\gamma = 1$ make the window round.

$\sigma = 4 \cdot 2^{i/2}; i = 1, 2, \cdots, 12$

Window size=2σ in x and y

$\phi = 0$ No Phase difference

$\theta = i\dfrac{\pi}{18}; \quad i = 0, \ldots, 17$

for each σ, θ we have two kernels:

$$\sin\left(\frac{2\pi x}{2\sigma}\right), \quad \cos\left(\frac{2\pi x}{\sigma}\right)$$