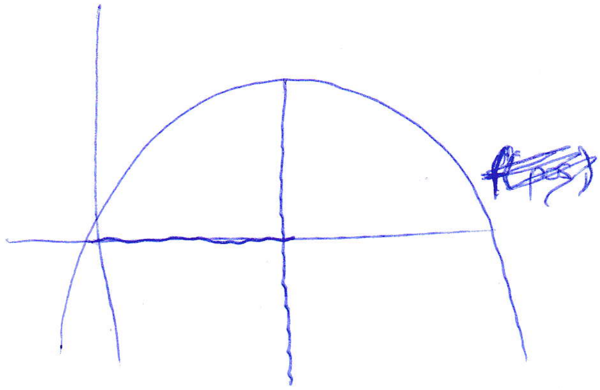
2



~~f(x)~~

$$Y(\cancel{x+a}\,t) = Y(\cancel{x}\,0) - \frac{1}{2}t^2\lambda$$

$$= h - \frac{1}{2}t^2\lambda$$

$$Y(\cancel{x+a}\,\text{pos}) = h - \cancel{\tfrac{1}{2}t}\,\frac{1}{2}(\text{pos})^2\lambda$$

max on lattice $= f(\text{pos}, h)$

$\boxed{\text{f: elliptic paraboloid } f^n \quad h\text{: height of the maximum}}$

$$\mathbb{P}(\max > X) = \mathbb{P}(f(\text{pos}, h) > X)$$

$$= \mathbb{E}\left[\mathbb{1}[f(\text{pos}, h) > X]\right]$$

$$= \int \mathbb{1}[f(\text{pos}, h) > X]\, p(\text{pos}, h)$$

have an explicit form for $f(\text{pos}, h)$ and hence the distb^n of pos and h.

So can calculate the distribution of $f(\text{pos}, h)$.

transform vars, $\cancel{x}\, y = f(\text{pos}, h)$, $\cancel{y}\, z = \text{pos}$.

$$\int_{\cancel{x+}\,y=x}^{\infty}\int_z p(y,z)\,|J|\,dy\,dz.$$

in terms of smoothness, lattice size

independent

$$\boxed{h} - \boxed{\frac{1}{2}(\text{pos})^2\lambda}$$

Need bounds on the approximation error!

~~h ~ exp~~, $(\text{pos})^2 \sim \text{Uniform}^2$,

$h \sim \exp + v$

threshold

or without v have Dan's formula using Kac-Rice.

~~for a~~ local max