

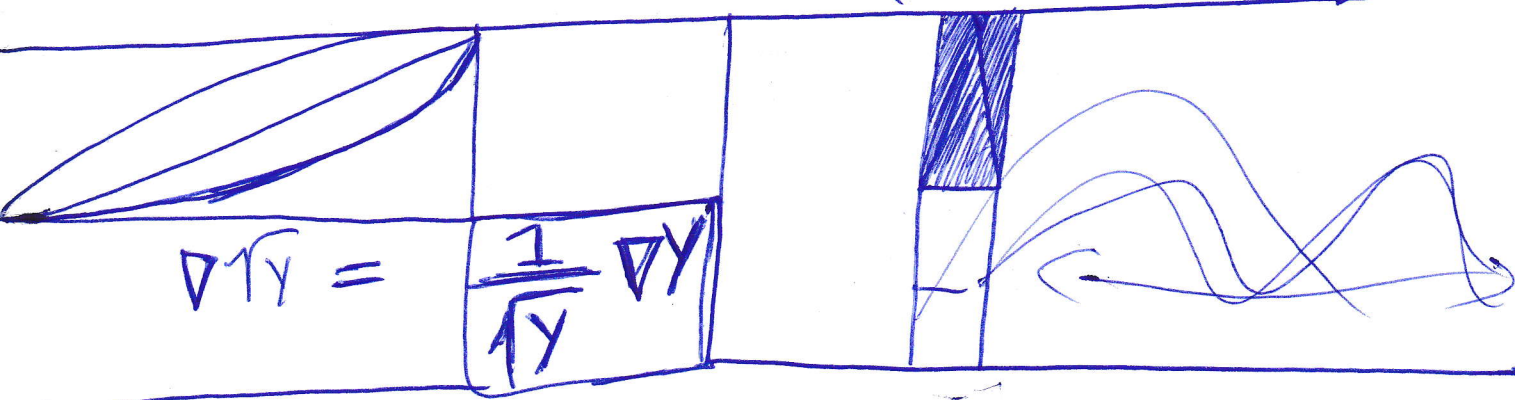
$$\Rightarrow \nabla Y(s) = \iint f(t)f(r) \frac{d}{ds} (\cos(2\pi rs) \cos(2\pi ts)) dt dr.$$

$$\text{Var}(Y(s)) = E[Y^2] - (EY)^2$$

$$EY = \iint E[f(t)f(r)] \cos(2\pi rs) \cos(2\pi ts) dt dr.$$

cos cos + sin sin

$$Y = \iint f(t)f(r) \cos(2\pi rs - 2\pi ts) dt dr.$$



$$\sum_{r=1}^n \sum_{t=1}^n E[f(t)f(r)]$$

in 1D this is easy  
no?

is est by  $\frac{1}{n} \text{sum}(\text{corr}(f_i, f_i))$

$$E[f(t)f(r)] \approx \frac{1}{n} \sum_{i=1}^n f_{i0}(t) f_{i0}(r).$$

so need to correlate  $f_i$  with  $f_i$