Cosmology 2

Week 3

Prof. Rennan Barkana

http://wise-obs.tau.ac.il/~barkana/cosmology2.html

Statistics: Example

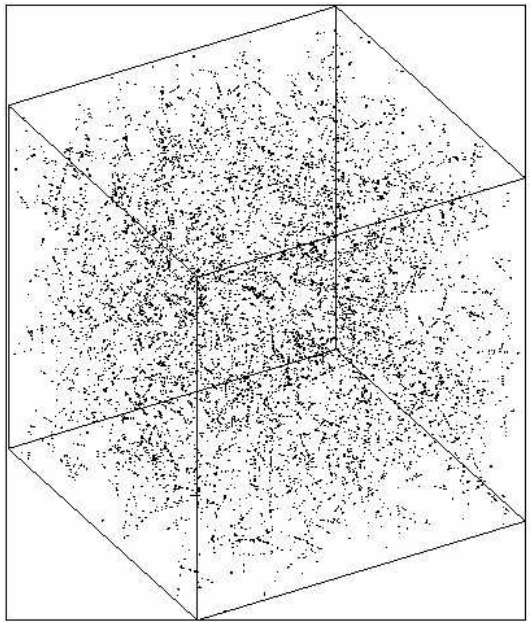
Cox Process

$$\xi_{Cox}^{r \leq L}(r) = \frac{1}{2\pi n_S}\left(\frac{1}{r^2 L} - \frac{1}{rL^2}\right)$$

$L = 10$

$V = 100^3$

$\langle N_S \rangle = 1000$



Martinez & Saar 2002

http://nedwww.ipac.caltech.edu/level5/Sept02/Martinez/Martinez_contents.html

https://arxiv.org/abs/astro-ph/0209208

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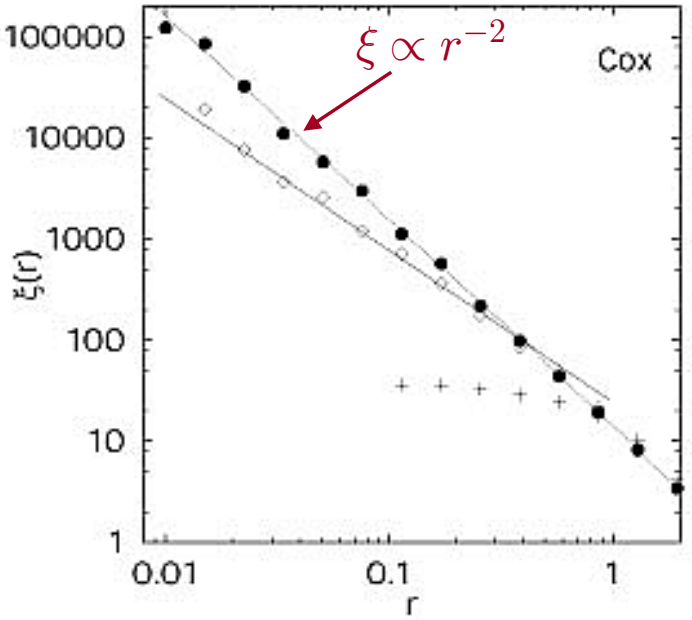

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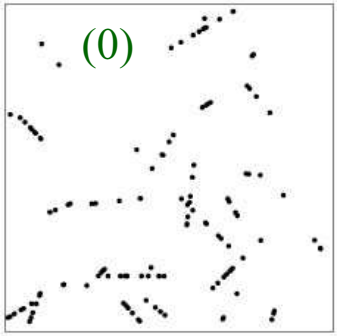
Statistics: Example

(0) Cox Process

Slice:
$40 \times 40 \times 10$

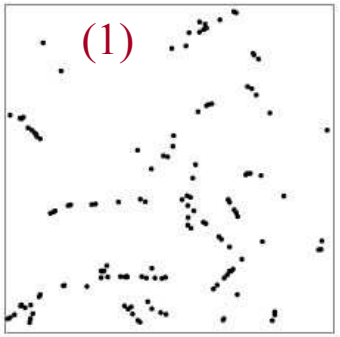
$L = 10$
$V = 100^3$
$\langle N_S \rangle = 1000$

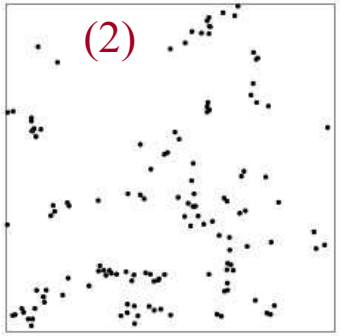


Smoothing:

d

(1) $p(d) \propto d^{-0.75}$
(2) Normal $(\sigma = 0.5)$





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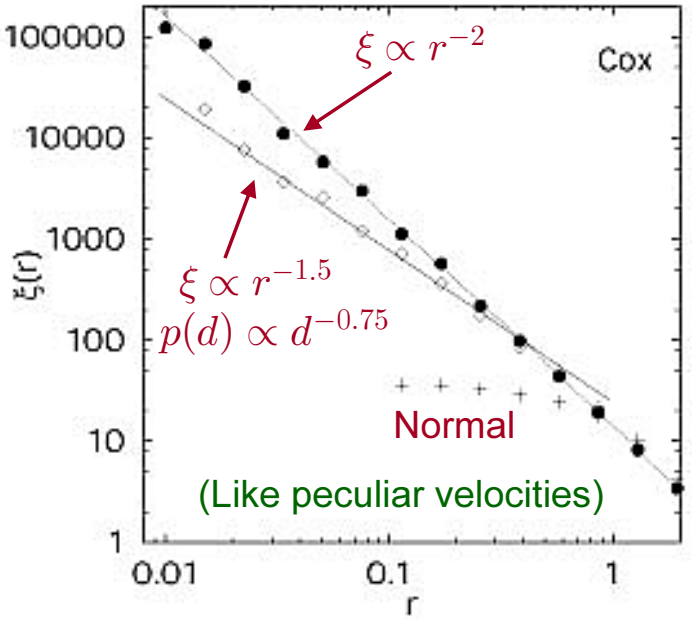

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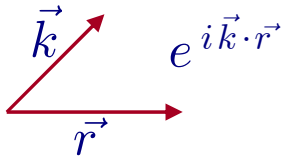
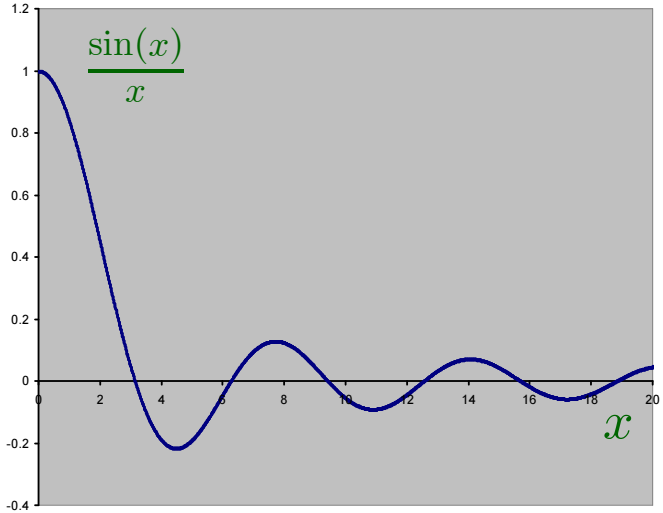
Statistics: P.S.

$$\xi(r) = \frac{1}{2\pi^2}\int_0^\infty k^2 dk P(k)\frac{\sin(kr)}{kr}$$



$kr \ll 1$:

Two points at distance r are on the same part of the wave.



Statistics: P.S.

$$\bar{\xi}(0) = \frac{1}{2\pi^2}\int_0^\infty k^2 dk P(k)\tilde{W}^2(kR)$$