Diffusion in Genotype Space

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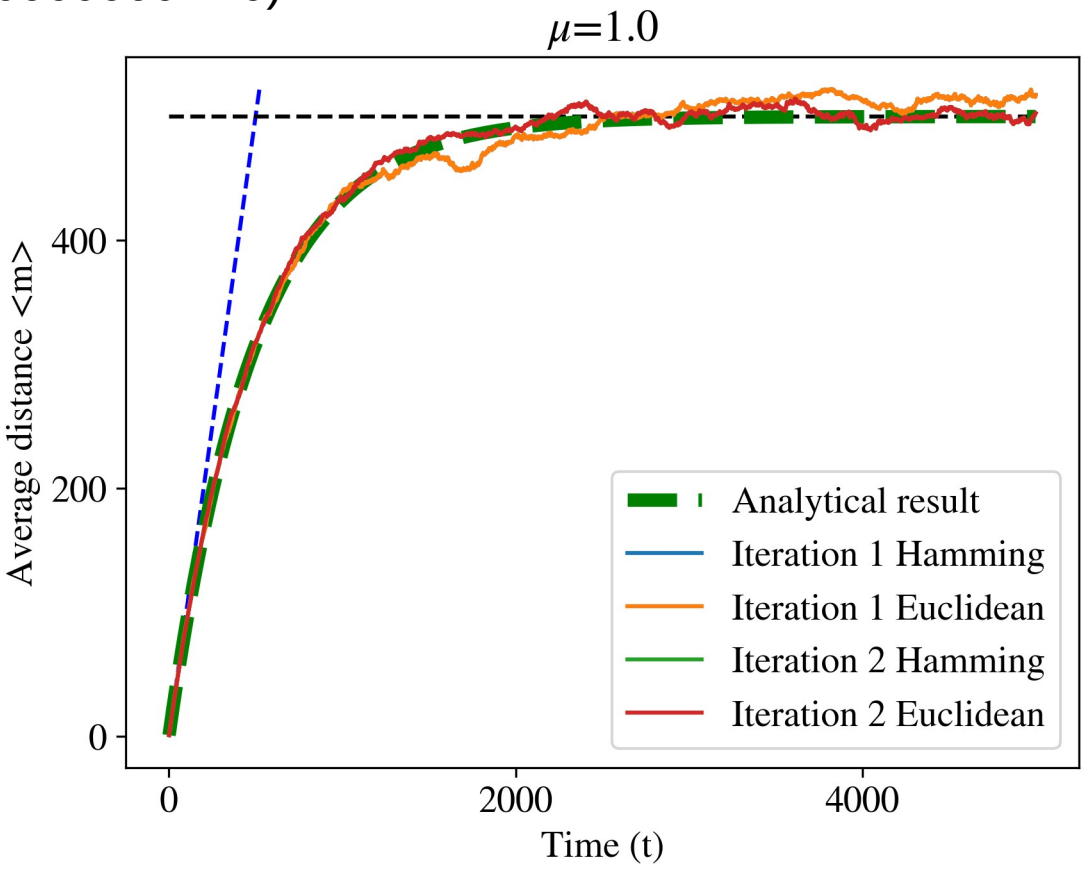
Origin (00000000….0)



$$m(t) = \lambda \left[1 - (1 - \frac{m_{(0)}}{\lambda})e^{-\frac{\mu t}{\lambda}}\right]$$

$L = 1000$
$\mu = 1.0$
$N = 1000$

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$$\frac{dm}{dt} = (+1) \cdot p_+ + (-1) \cdot p_- = \mu \left(1 - 2\frac{m}{L}\right)$$

$$\lambda = \frac{L}{2} \qquad \breve{m} = \frac{m}{\lambda} \qquad \tau = \frac{\mu t}{\lambda}$$

$$\frac{d\breve{m}}{d\tau} = 1 - \breve{m} \qquad \breve{m}(t) = 1 - (1 - \breve{m}_{(0)})e^{-\tau}$$

$$m(t) = \lambda \left[1 - (1 - \frac{m_{(0)}}{\lambda})e^{-\frac{\mu t}{\lambda}}\right]$$

$$\lim_{t \to \infty} m(t) = \lambda \qquad \lim_{t \to 0} m(t) = m_{(0)} + (1 - \frac{m_{(0)}}{\lambda})\frac{\mu t}{\lambda}$$

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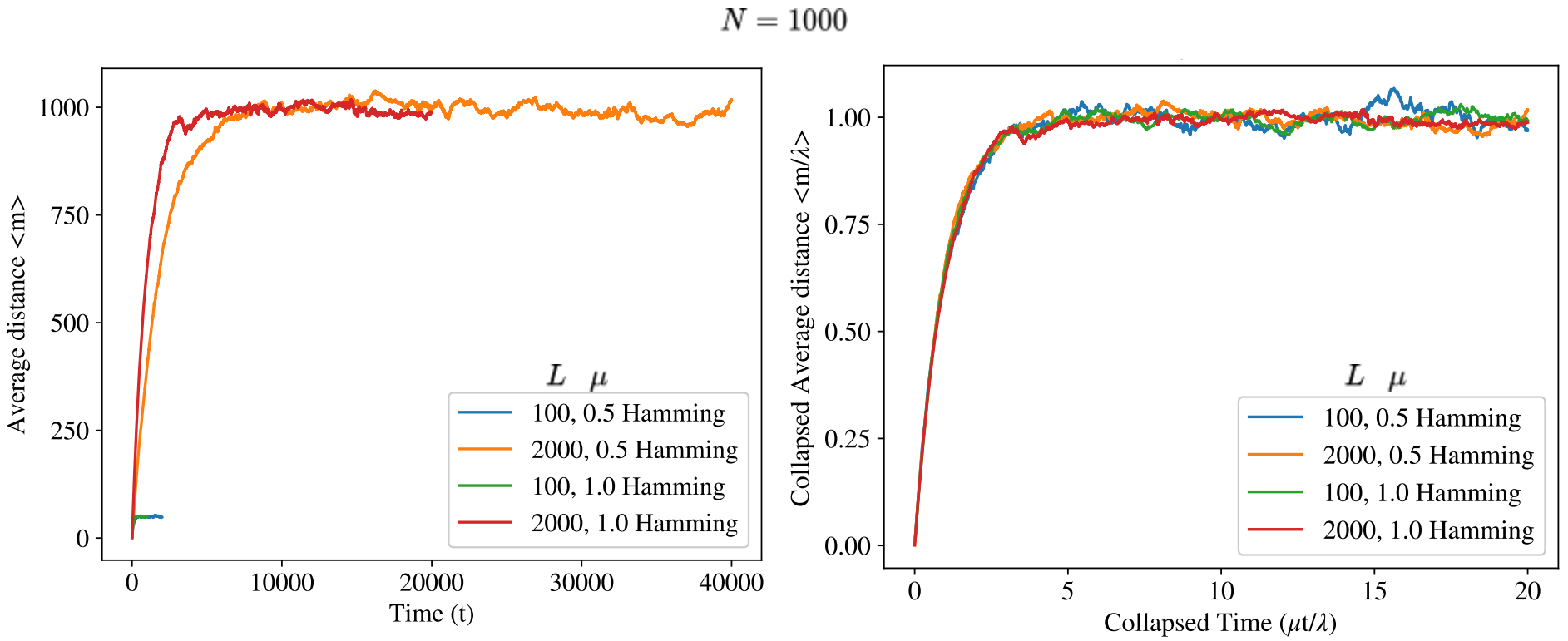

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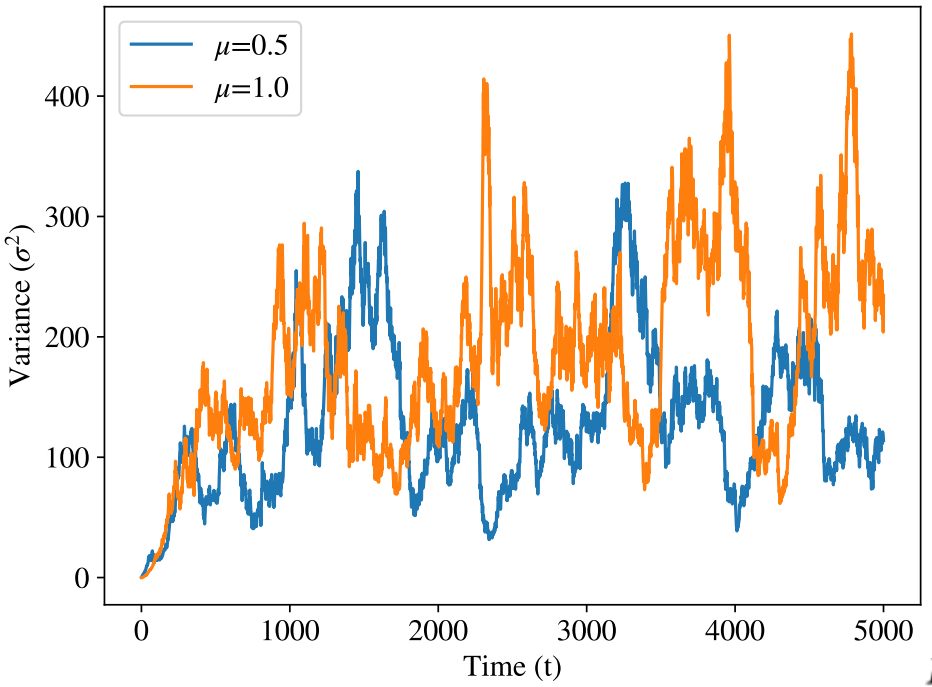
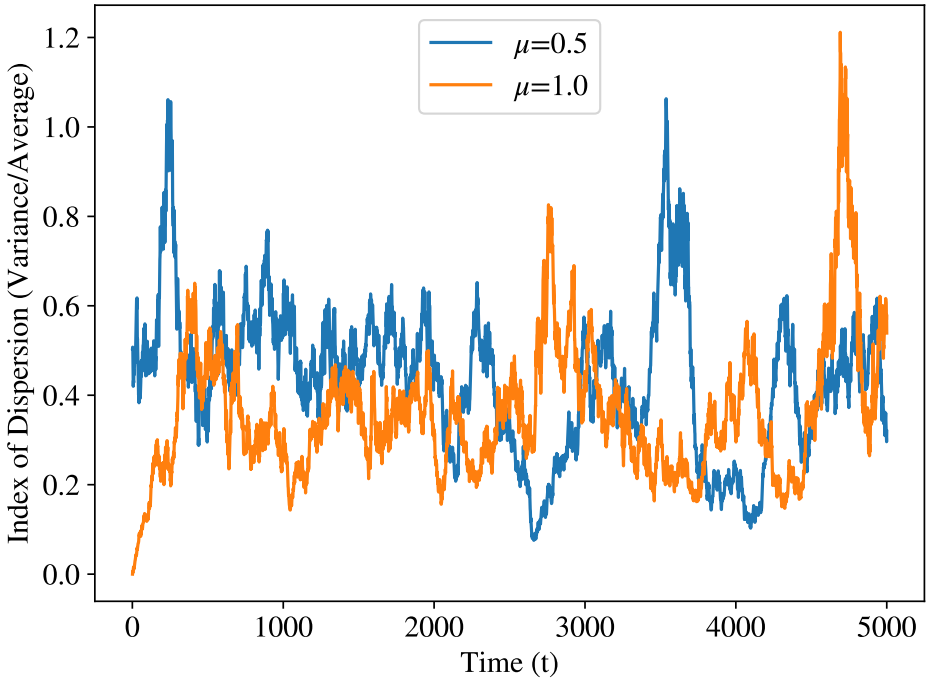


$L = 100$
$N = 100$



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$\mu = 1.0$
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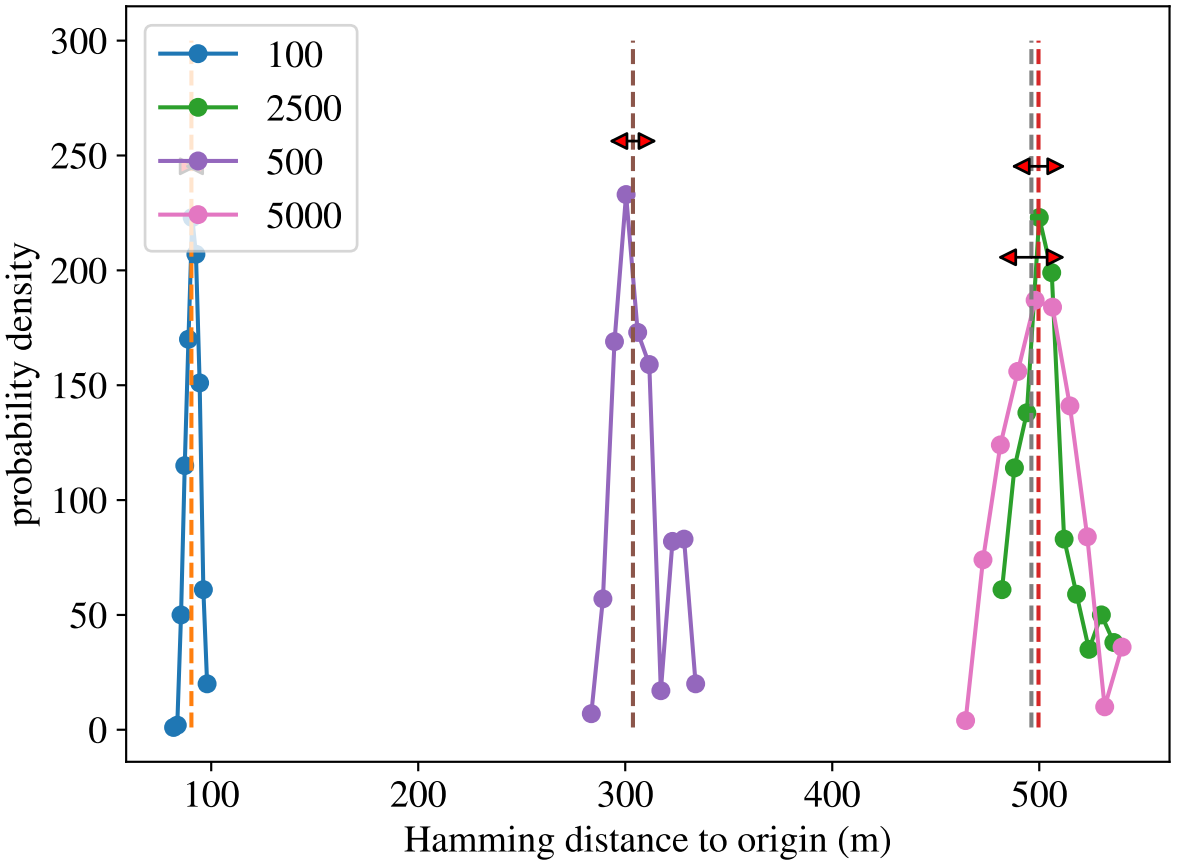

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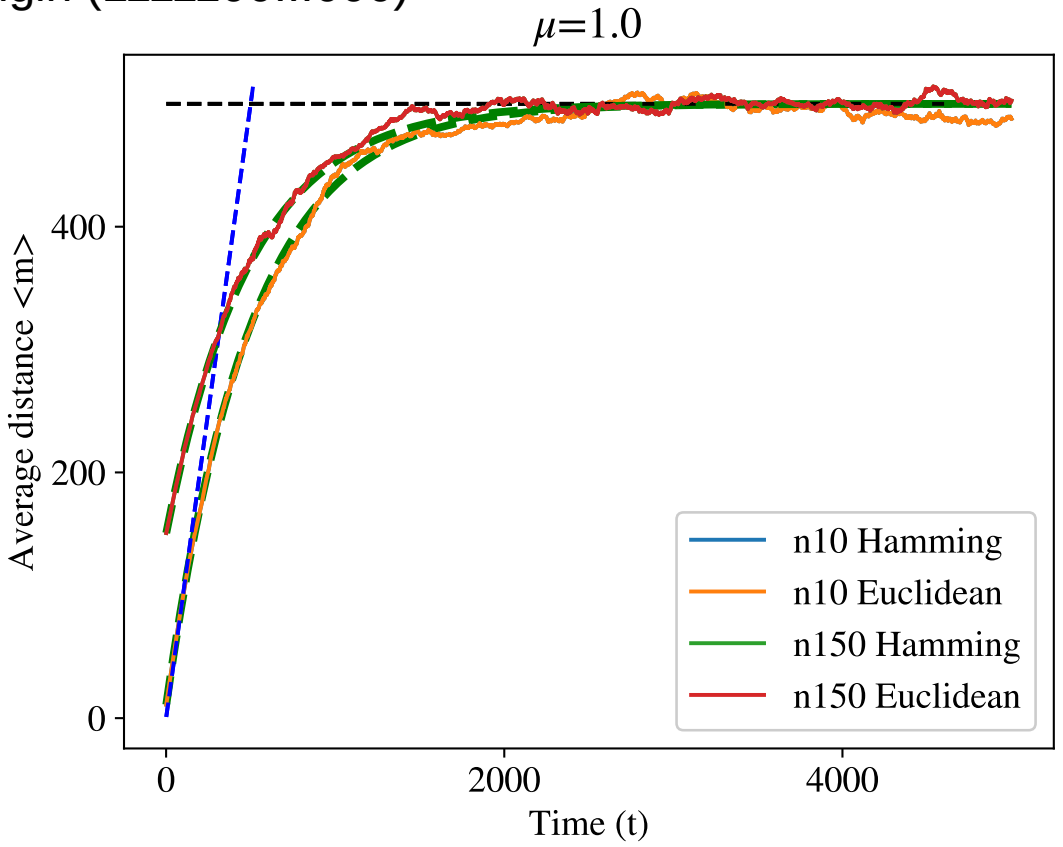
Origin (1111100...000)



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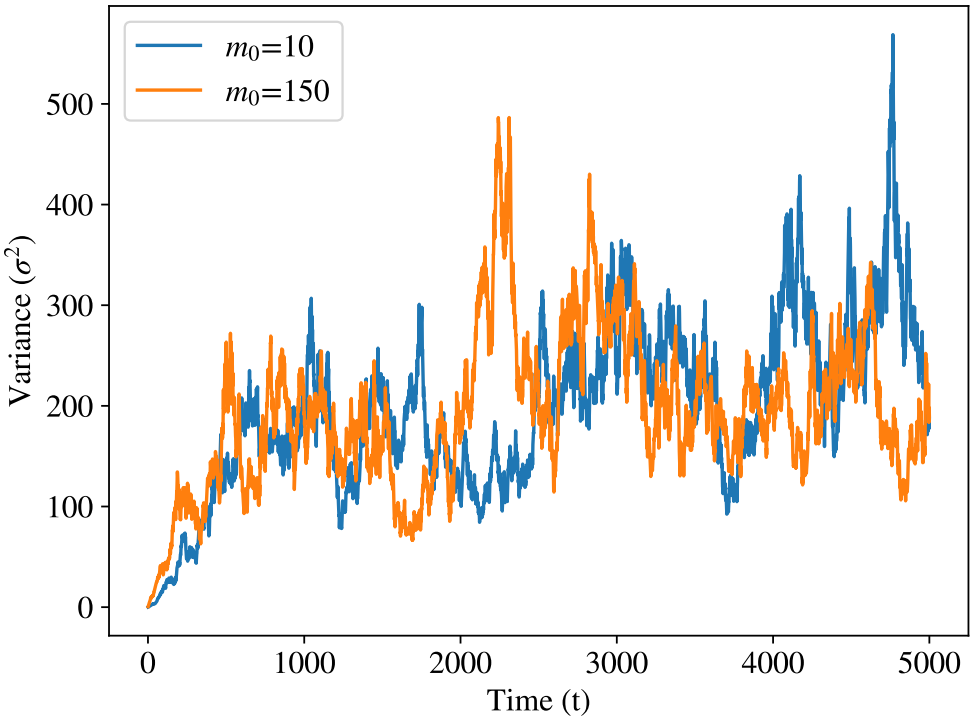

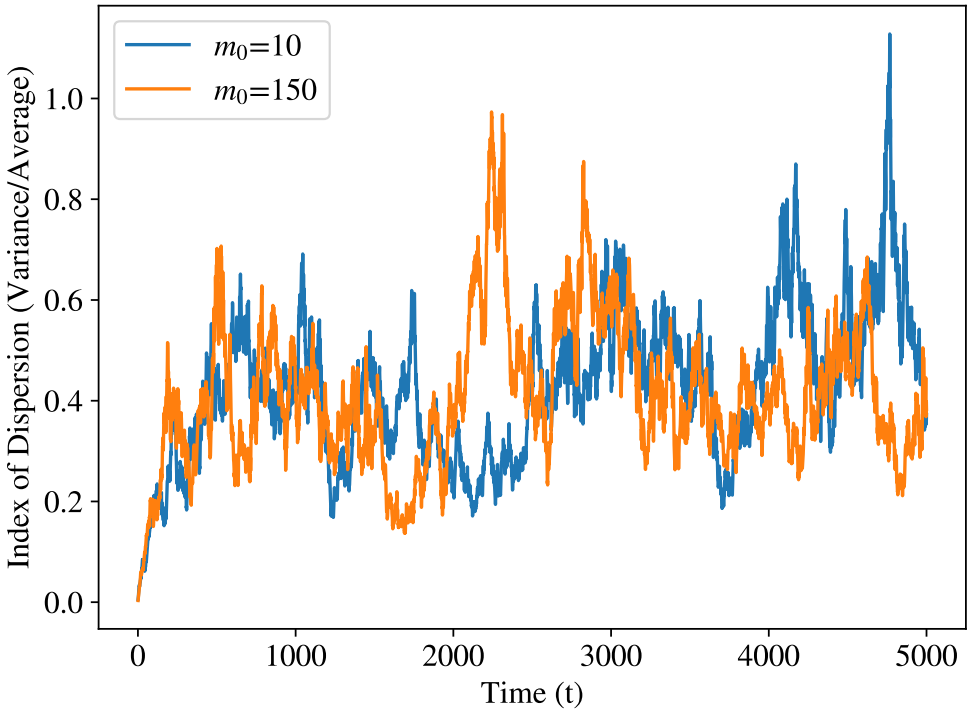

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