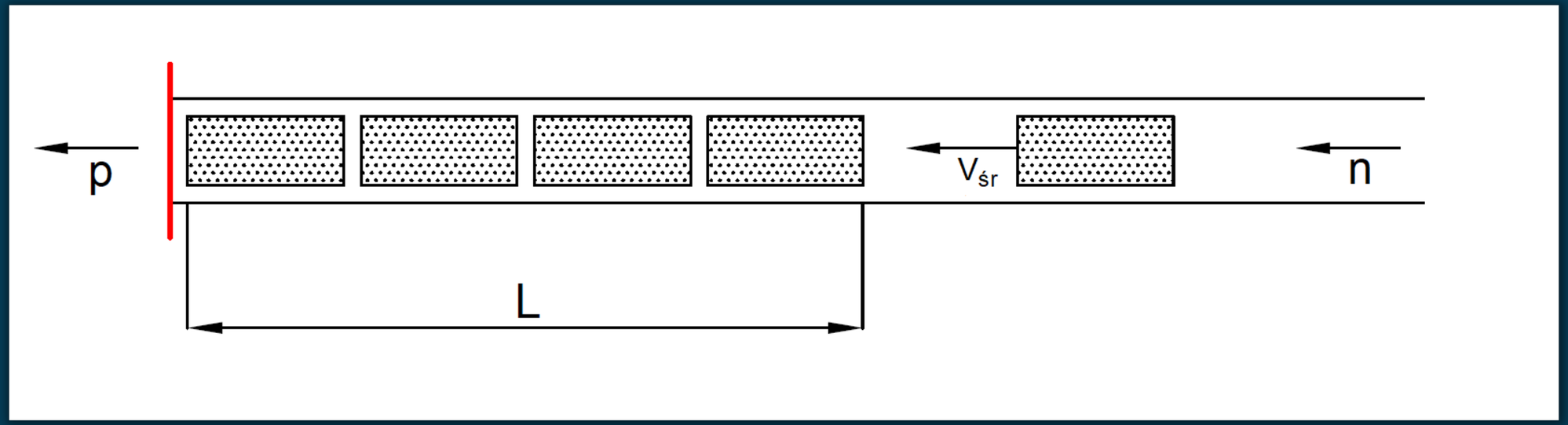
MODELOWANIE RUCHU ULICZNEGO

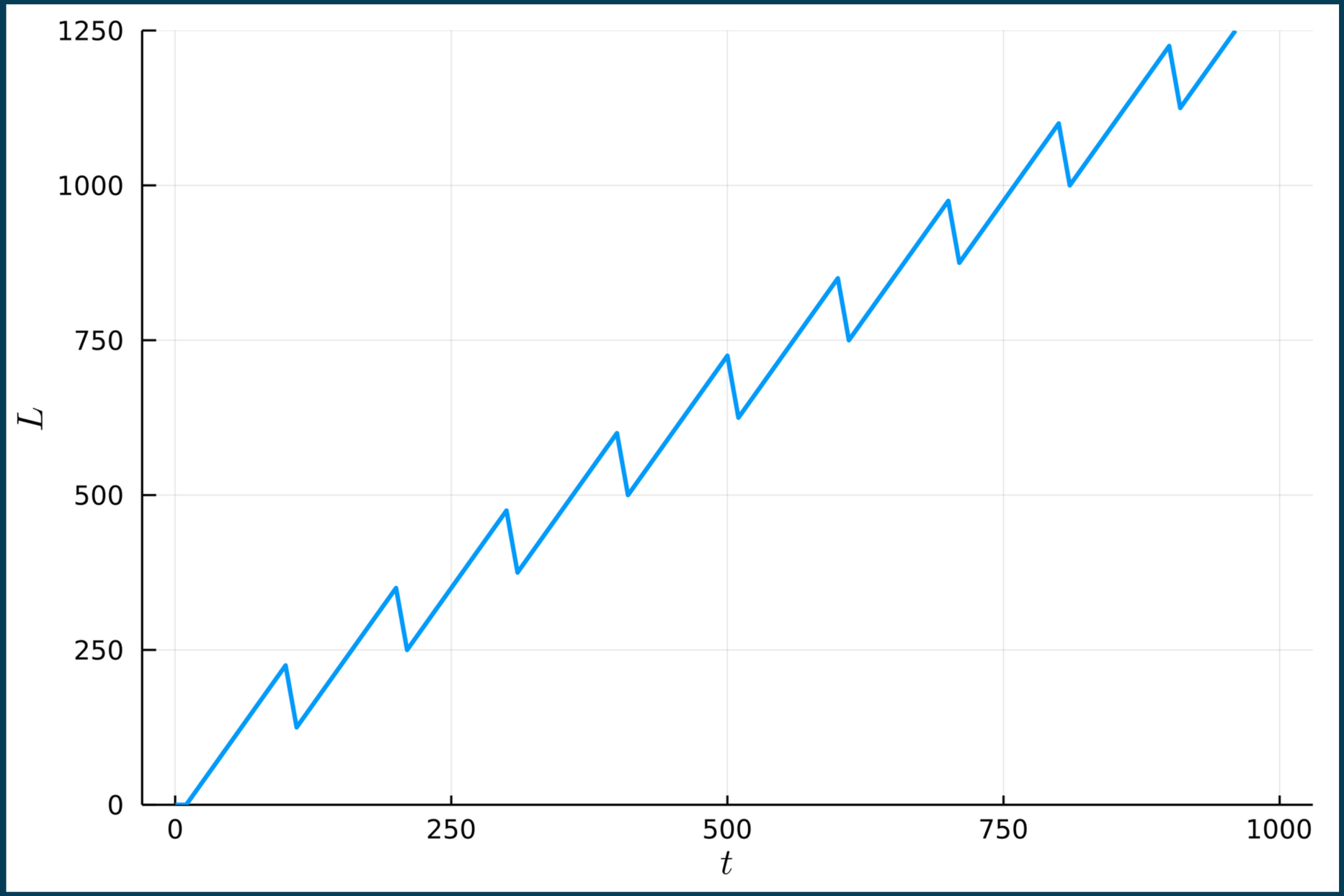
NATALIA KLEPACKA
SZYMON MALEC
FILIP OSZCZEPALIŃSKI
DAMIAN SZUSTER
MICHAŁ WIKTOROWSKI

RÓWNANIE RÓŻNICZKOWE

$$L' = \left(v_{sr} + L'\right) g\left(t\right) - p\left(t\right)$$

$$L\left(t\right) = L_0 + \int_0^t \frac{v_{sr} g\left(\tau\right) - p\left(\tau\right)}{1 - g\left(\tau\right)} d\tau$$

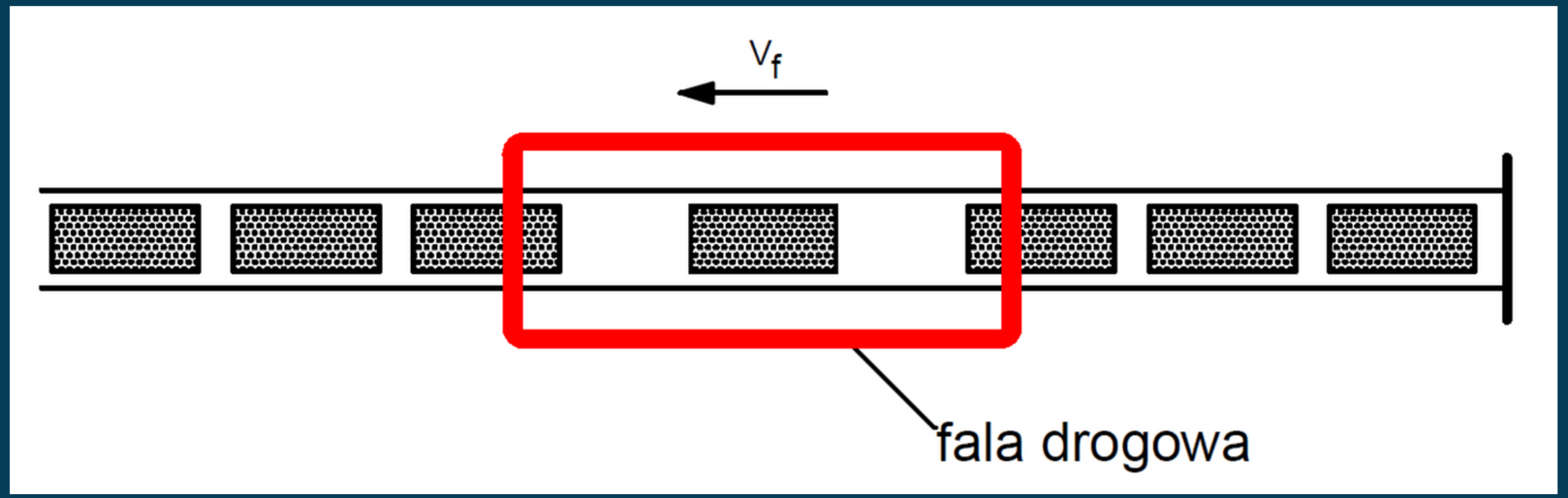


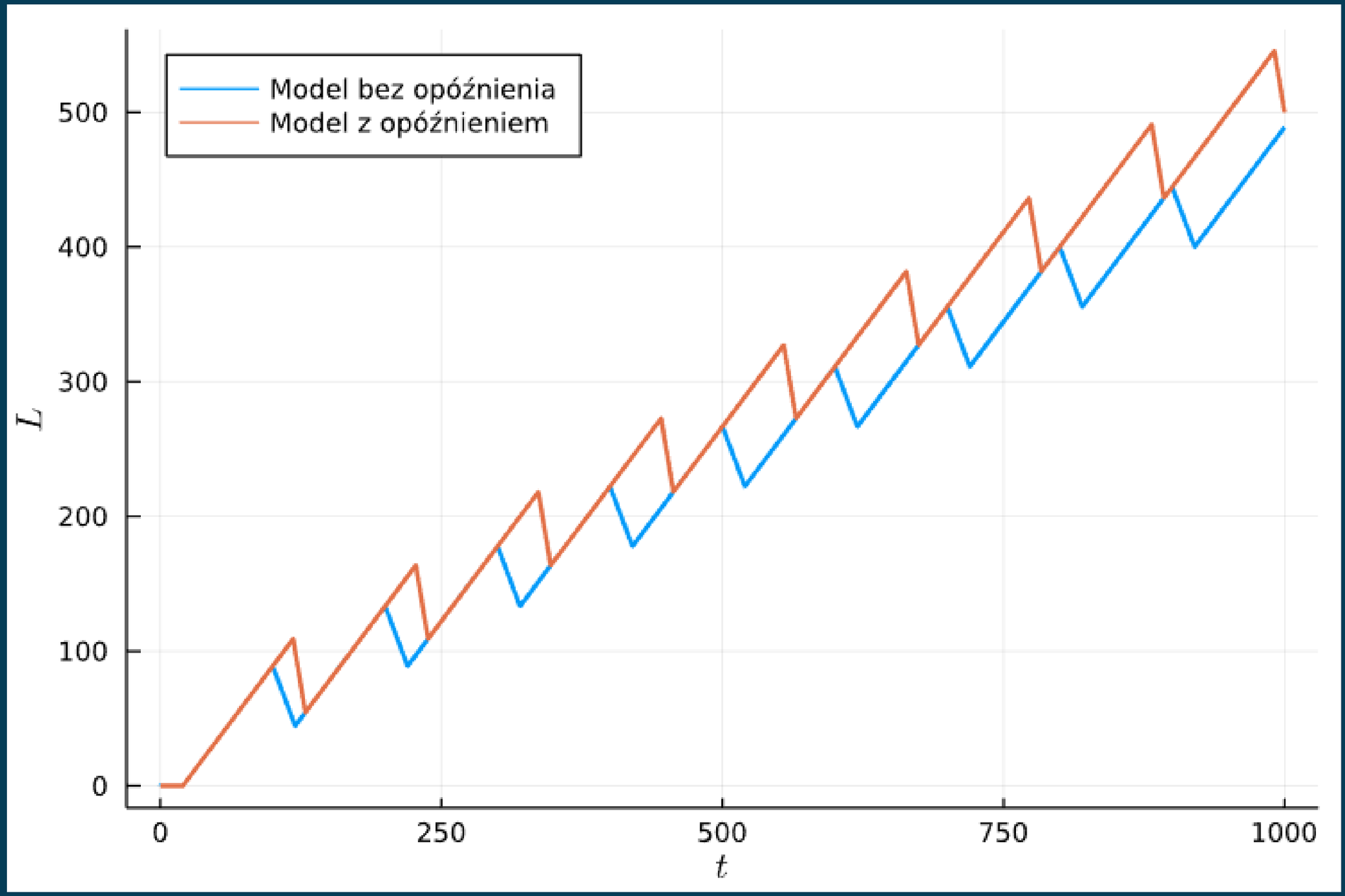

1250
1000
750
500
250
0
L
0
250
500
750
1000
t

RÓWNANIE RÓŻNICZKOWE Z OPÓŹNIENIEM

$$L' = (v_{sr} + L')g(t) - \left(1 - \frac{L'}{v_f}\right) p\left(t - \frac{L}{v_f}\right)$$

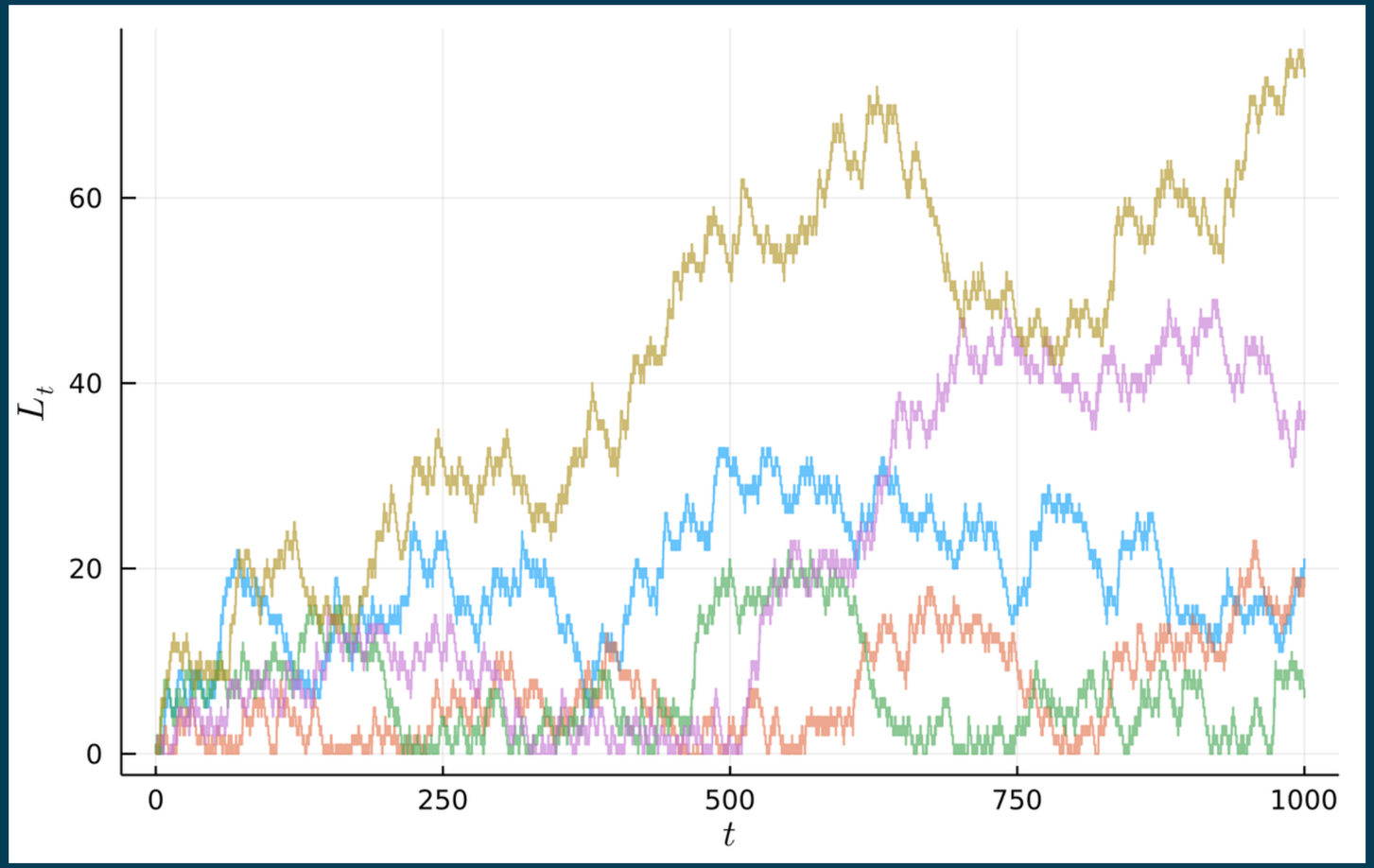
$$L' = \frac{v_{sr} g(t) - p\left(t - \frac{L}{v_f}\right)}{1 - g(t) - \frac{1}{v_f} p\left(t - \frac{L}{v_f}\right)}$$



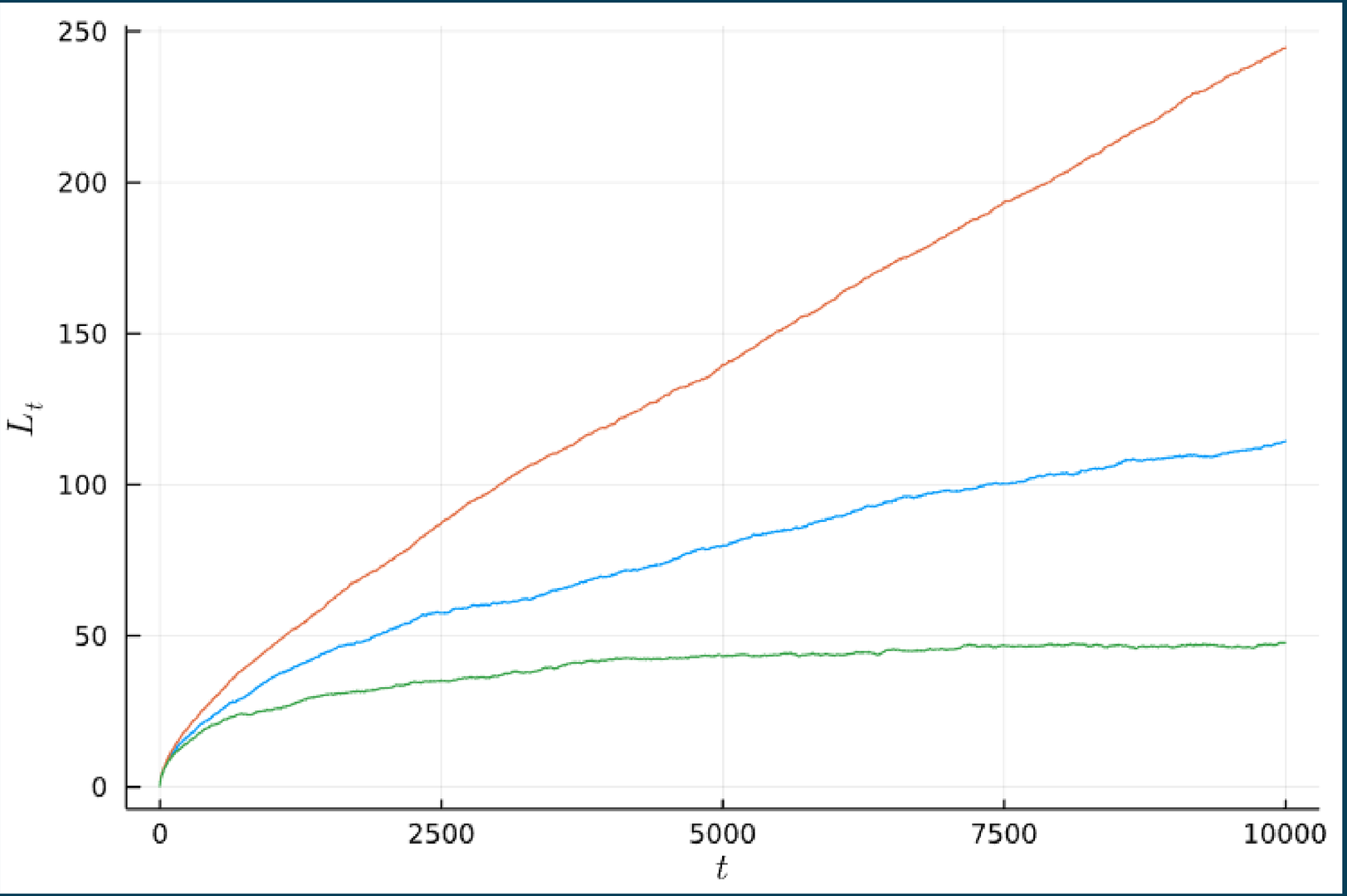

Model bez opóźnienia
Model z opóźnieniem
500
400
300
200
100
0
L
0
250
500
750
1000
t

MODEL STOCHASTYCZNY

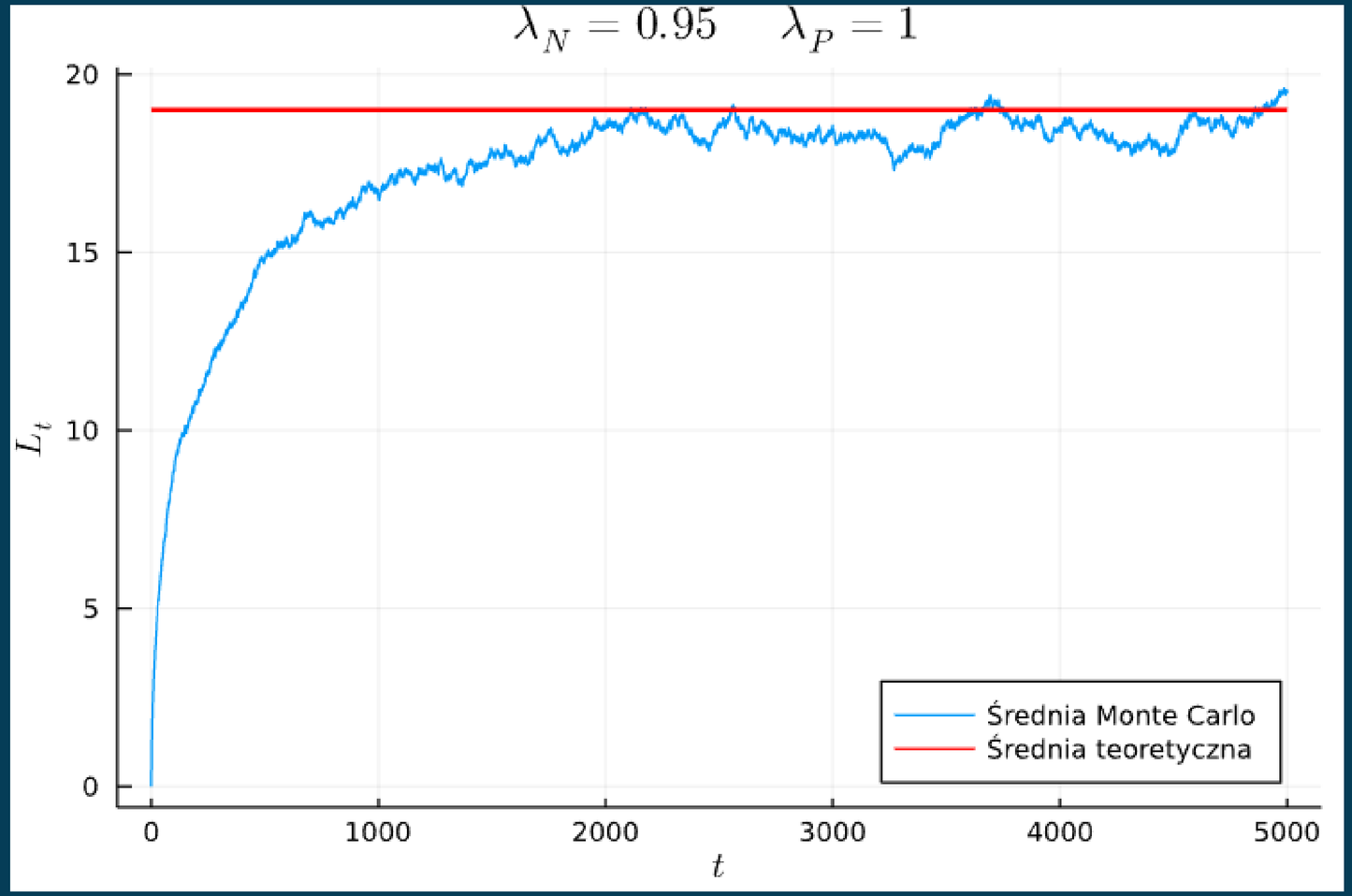
$$L_t = N_t - P_t$$



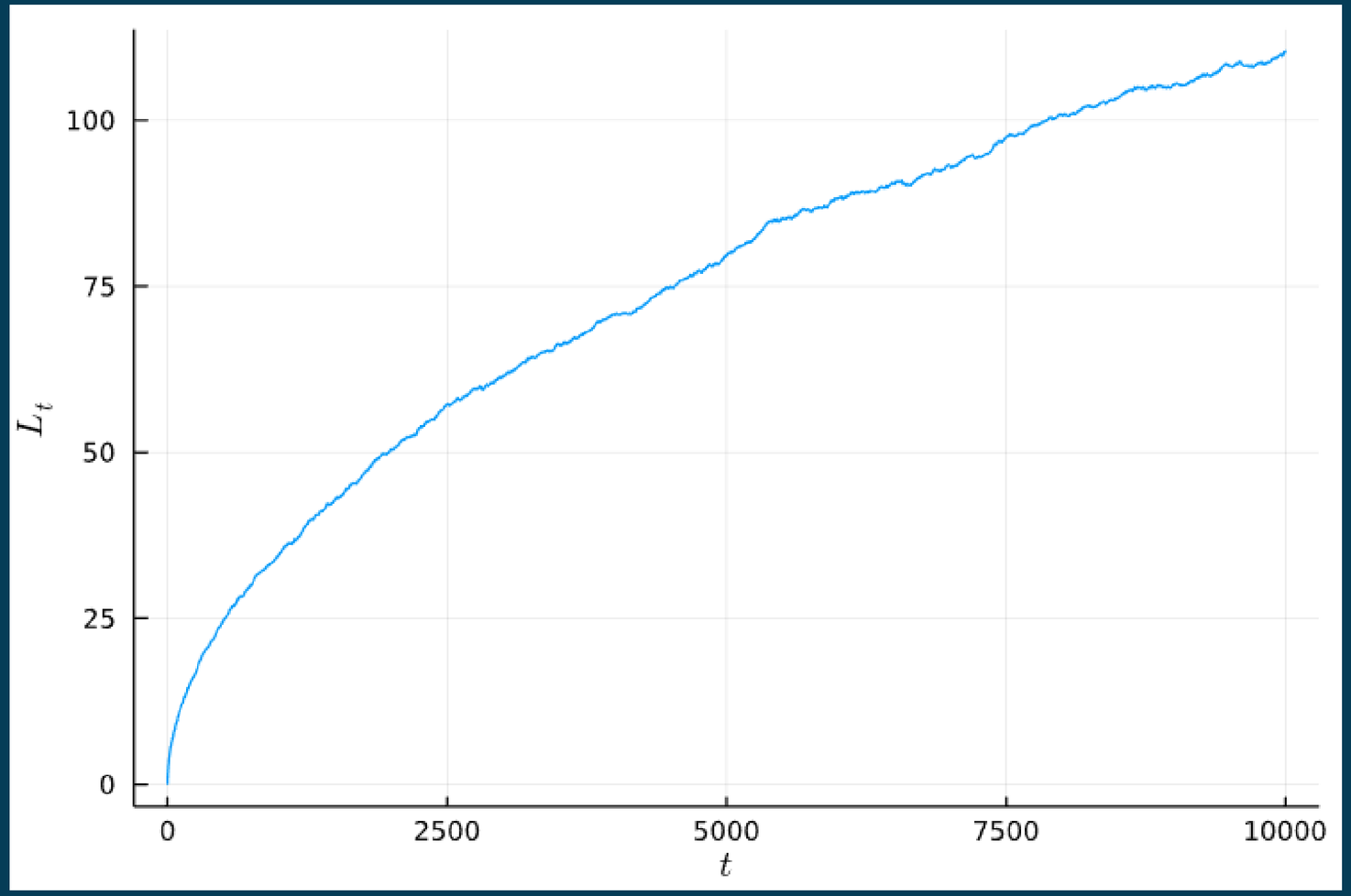
KOLEJKA MM1



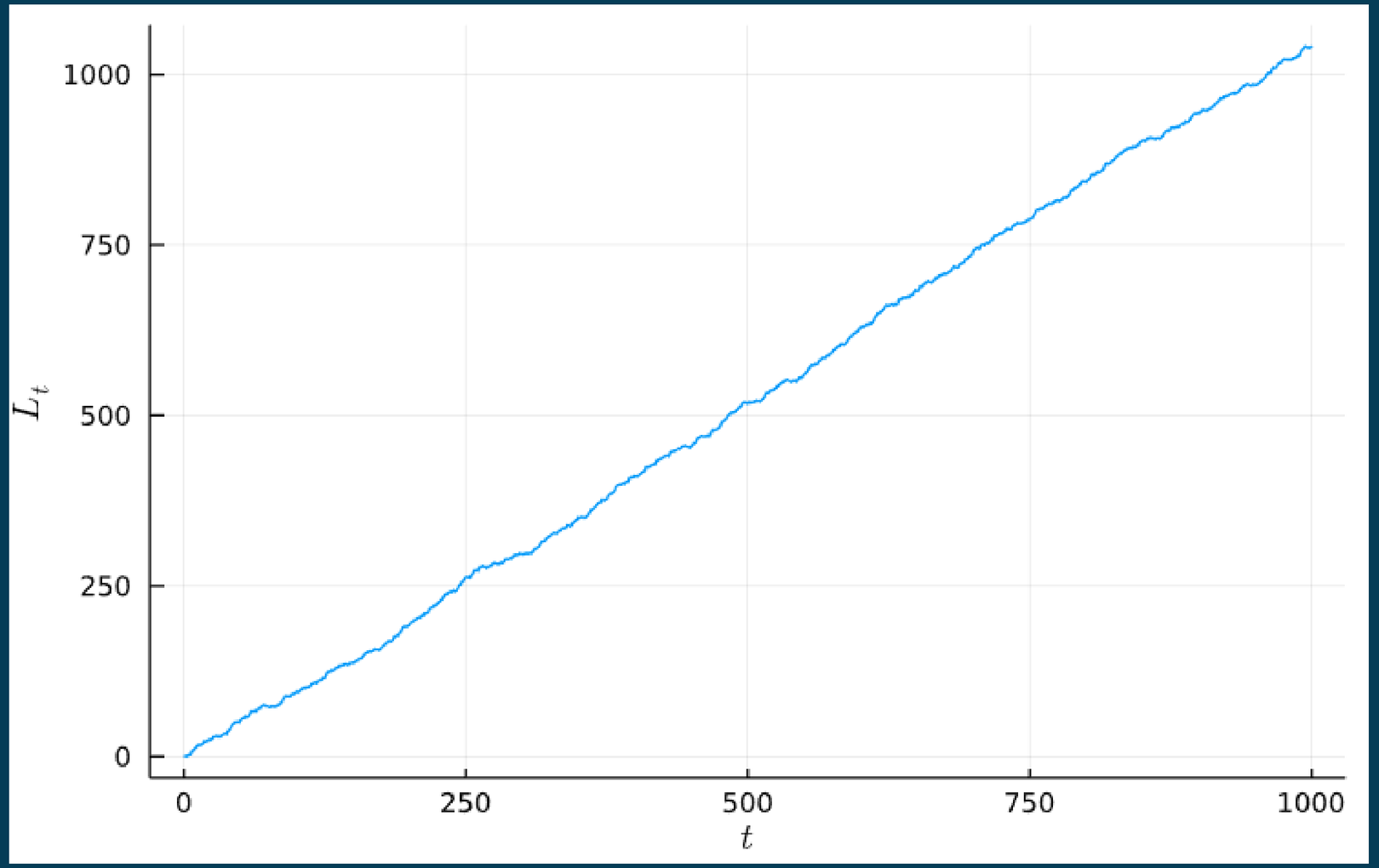
$$\rho = \frac{\lambda_N}{\lambda_P} \qquad \lim_{t\to\infty} \mathrm{E}L_t = \frac{\rho}{1-\rho} \quad \text{dla} \quad \rho < 1$$



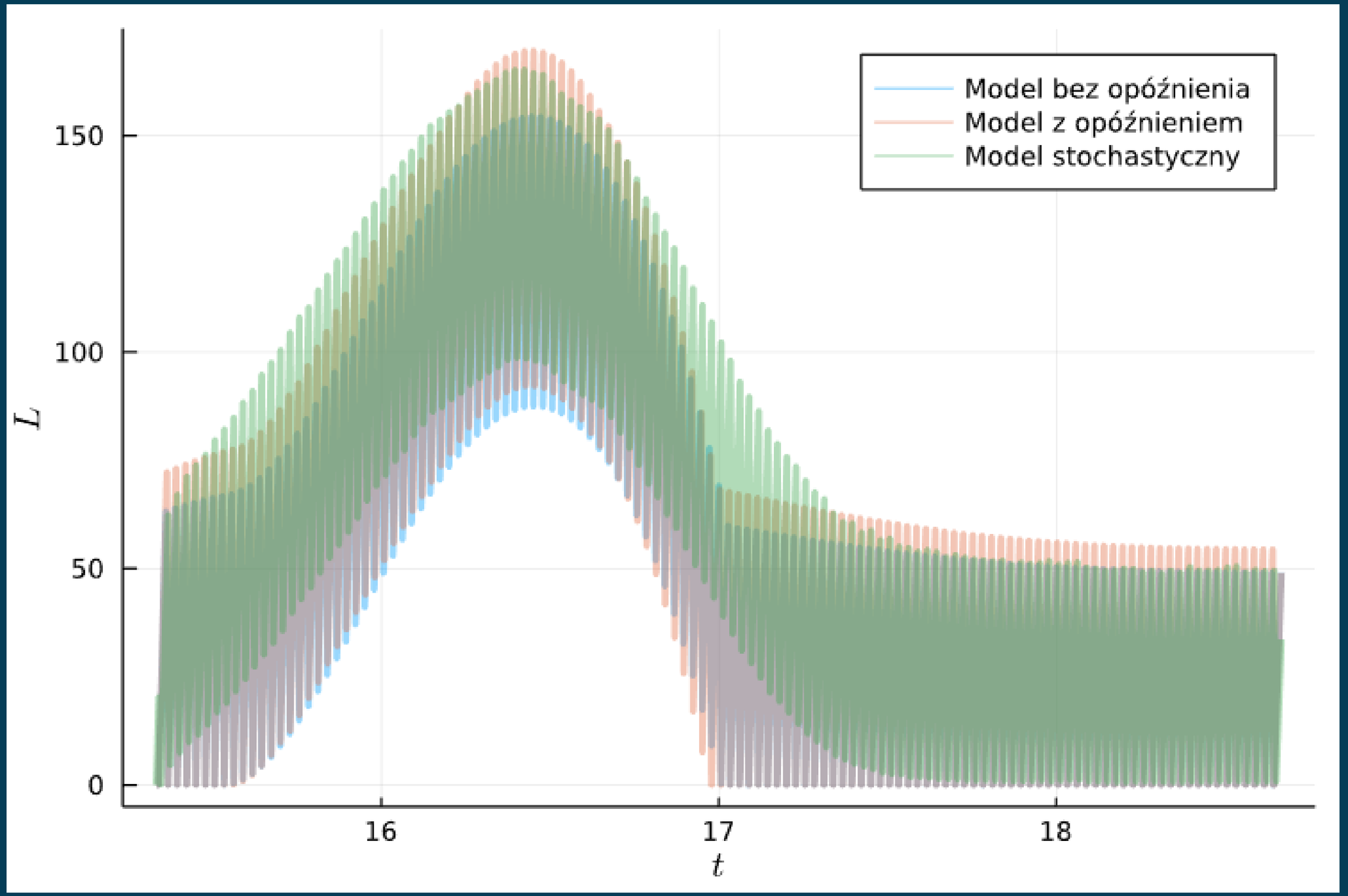
$$\mathrm{E}L_t \approx 1.1\sqrt{\lambda t}$$



$$\mathrm{E}L_t \approx L_0 + (\lambda_N - \lambda_P)t$$



POMIARY


Model bez opóźnienia
Model z opóźnieniem
Model stochastyczny
150
100
50
0
L
16
17
18
t

DZIĘKUJEMY ZA UWAGĘ