

1 Magnus expansion for A, B constant and deterministic

We will concern ourselves with the following SDE:

$$dX_t = BX_t dt + AX_t dW_t$$

with

$$A = \begin{bmatrix} 0.335302 & -0.645492 \\ -0.264419 & 0.634641 \end{bmatrix}$$

and

$$B = \begin{bmatrix} -0.0572262 & 0.0493763 \\ -0.665366 & 0.742744 \end{bmatrix}$$

The spectral norm of A is 1. and the spectral norm of B is 1.

1.1 Parameters

Parameter	value
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t_0	0
T	1
<code>N_fine</code>	10001
N	101
<code>M_fine</code>	1000
M	1000
d	2

1.2 Computational Times

Method	Log	Matrix Exp	Total
Run 1			
euler	0	0	6.97129
m3	0.0447763	0.564929	0.609705
Run 2			
euler	0	0	6.94317
m3	0.0475184	0.584098	0.631616
Run 3			
euler	0	0	6.94672
m3	0.0417752	0.530436	0.572211
Mean Time			
euler	0	0	6.95372
m3	0.04469	0.559821	0.604511