

TUTORIAL - STOCHASTIC DYNAMICS WITH AEROSPACE APPLICATIONS

Topic 01 - Calculation of statistical characteristics and simulation of random variables and events

T01_Script_01.m	Simulation of a three-dimensional Gaussian vector
Description	...coming soon...

Topic 02 - Calculation of a mean value and a variance of the stochastic process for its realization

T02_SimModel_01.slx	Calculation of a mean and a variance (discrete time)
T02_SimModel_02.slx	Calculation of a mean and a variance (continuous time)
Description	...coming soon...

Topic 03 - Calculation of the covariance function of a stochastic process

T03_Script_01.m	Covariance function
T03_SimModel_01.slx	
Description	...coming soon...

Topic 04 - Calculation of a spectral density of the stochastic process

T04_Script_01.m	Spectral density
T04_Script_02.m	Power spectral density estimate using the Fourier transformation
T04_Script_03.m	Periodogram & Welch power spectral density estimate
Description	...coming soon...

Topic 05 - Frequency domain analysis

T05_Script_01.m	Frequency domain analysis of LTI systems (spectral densities)
Description	...coming soon...

Topic 06 - Shaping filters

T06_Script_01.m	Shaping filters
T06_SimModel_01.slx	
Description	...coming soon...

Topic 07 - Statistical analysis of an ergodic LTI system using the Monte-Carlo method

T07_SimModel_01.m	Statistical analysis of the ergodic LTI system using Monte-Carlo method
Description	...coming soon...

Topic 08 - Statistical analysis of a non-ergodic system using the Monte-Carlo method

T08_Script_01.m	Monte-Carlo simulation
Description	...coming soon...

Topic 09 - Moment's equations method

T09_Script_01.m	Moment's equations
Description	...coming soon...

Topic 10 - Estimation problem on a full sample in a dynamic system using the least square method

T10_Script_01.m	Calculation the covariance matrix of state estimation errors
Description	...coming soon...

Topic 11 - Estimation problem on a full sample in a linear system

T11_Script_01.m	Estimation problem on a full sample in a linear system
Description	...coming soon...

Topic 12 - Estimation problem on a full sample in a non-linear system

T12_Script_01.m	Estimation problem on a full sample in a non-linear system using the least square method
T12_Script_02.m	Formation of a normalized vector of the estimation errors
Description	...coming soon...

Topic 13 - Recurrent estimation of a linear system state

T13_Script_01.m	Kalman filter
Description	...coming soon...

Topic 14 - Simulation modeling using Kalman filter

T14_Script_01.m	Simulation modeling using Kalman filter
Description	...coming soon...

-- --

*Description of a script or a model name

T00_	Script_ / SimModel	00	.m/.slx
number of the topic	a m-script or a simulink model	number of the script or the model in the topic	file extension