

11. SIMULINK ENVIRONMENT

11.1 Steps of Simulink Modelling

1. Opening of block library and model window \implies model composition
2. Definition of block values
3. Definition of modelling parameters and start of modelling

%% Example 11.1: Visualization of a harmonic function

11.2 Applications

1. Solution of differential equations and continuous signal modelling
2. Time series and matrix manipulation resulting in discrete signals modelling
3. Real data acquisition using applications libraries and submodels definition

%% Example 11.2: Solution of differential equation: $y''+y=0$, $y(0)=0$, $y'(0)=1$

%% Solution: 1. Explicit definition of the highest derivative: $y''=-y$

%% 2. Integration and corresponding block definition: $y'=\text{int}(-y) \text{ dy}$

%% 3. Description of another integration block: $y=\text{int}(y') \text{ dy}$

BLOCKS

SIGNAL GEN

SINE

CONSTANT

GAIN

SCOPE

XY GRAPH

DISPLAY

FROM/TO

WORKSPACE

The screenshot displays the Simulink environment with several windows open. On the left is the Simulink Library Browser showing various block categories. In the center, three 'Block Parameters' dialog boxes are visible: 'Signal Generator' (set to square wave), 'Integrator' (set to internal initial condition), and 'Gain' (set to 1). On the right, there are two Scope windows. 'Scope1' shows a sine wave plot labeled '(A) SELECTED FUNCTION PLOT'. 'Scope2' shows a circular plot labeled '(B) SOLUTION OF DIFFERENTIAL EQUATION'. The MATLAB command window at the bottom shows the prompt '>>'.

EXAMPLES 11

11.1 Visualization of selected functions

11.2 Solution of given differential equation