

Работа с моделью

Запуск

Получение данных

Изменение параметров

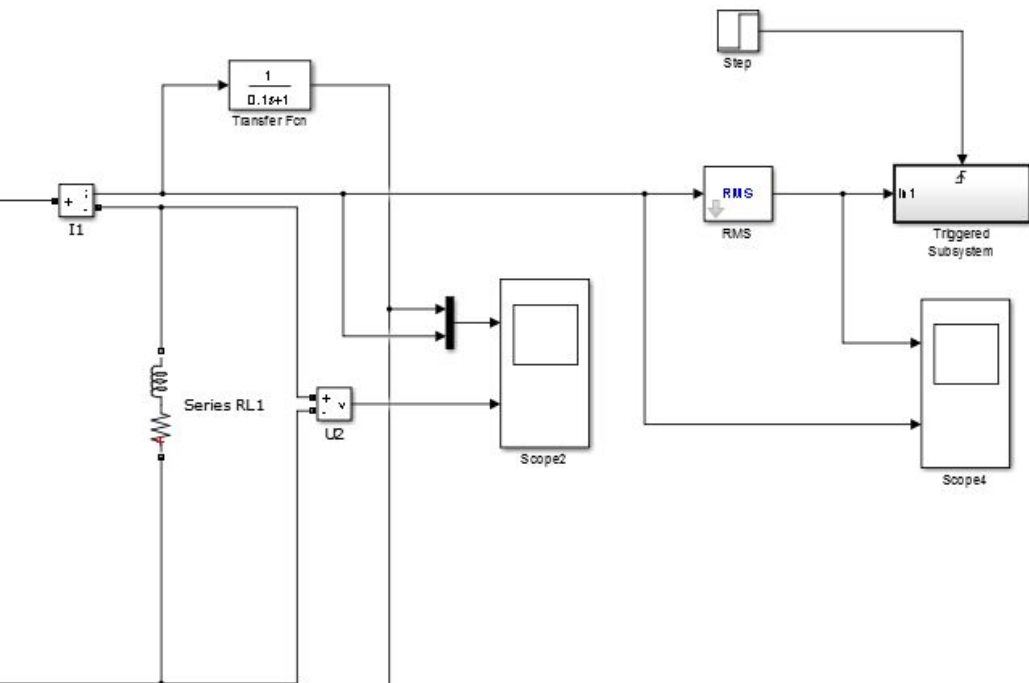
Цель

- Научиться работать с моделью из интерфейса матлаба
- Автоматизировать изменение параметров и сбор данных

Изменение в схеме



Trigger



Simulink

- Commonly Used Blocks
- Continuous
- Dashboard
- Discontinuities
- Discrete
- Logic and Bit Operations
- Lookup Tables
- Math Operations
- Model Verification
- Model-Wide Utilities
- Ports & Subsystems
- Signal Attributes
- Signal Routing
- Sinks
- Sources
- User-Defined Functions
- Additional Math & Discrete
- Aerospace Blockset
- Communications System Toolbox
- Communications System Toolbox HDL Support
- Computer Vision System Toolbox
- Control System Toolbox
- DSP System Toolbox
- DSP System Toolbox HDL Support
- Embedded Coder
- Fuzzy Logic Toolbox
- HDL Coder
- HDL Verifier
- Image Acquisition Toolbox
- Instrument Control Toolbox
- Model Predictive Control Toolbox
- Neural Network Toolbox
- OPC Toolbox
- Phased Array System Toolbox
- Report Generator
- Robotics System Toolbox
- Robust Control Toolbox
- SimEvents
- SimRF
- Simscape
- Foundation Library
- SimDriveline
- SimElectronics
- SimHydraulics
- SimMechanics
- SimPowerSystems
- Simscape Components
- Specialized Technology
- Fundamental Blocks
- Control & Measurements
- Additional Components
- Filters
- Logic
- Measurements
- PLL
- Pulse & Signal Generators
- Transformations
- Electric Drives
- FACTS
- Renewables
- Utilities
- Simulink 3D Animation

Simulink

Ports & Subsystems

Sinks

Simscape

SimPowersystems

Specialized Technology

Control & Measurements

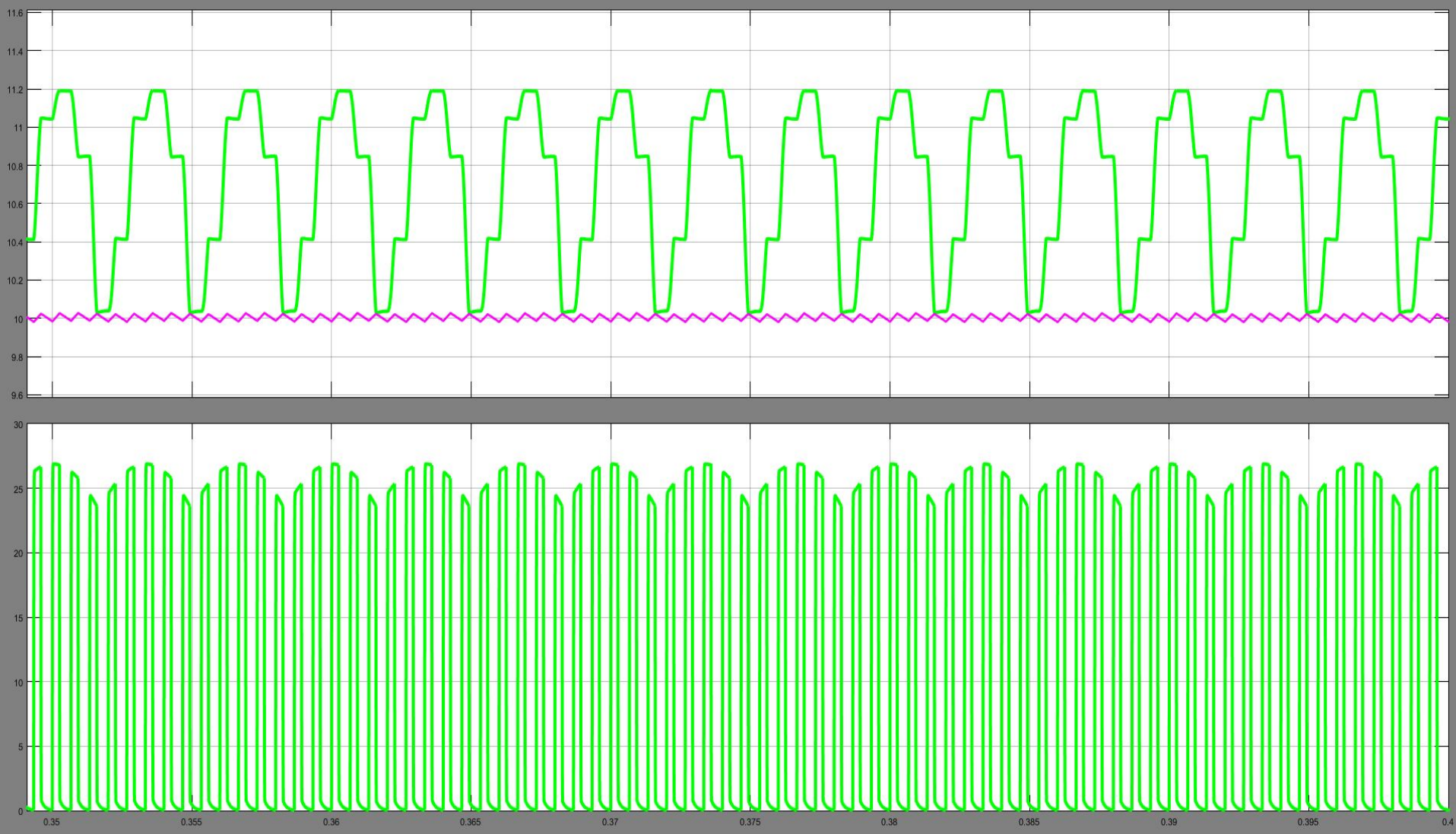
Measurments

Triggered Subsystem

simout To Workspace

RMS

RMS



Настройки

Function Block Parameters: RMS

RMS (mask) (link)

Measure the true root mean square (RMS) value of the input signal at the specified fundamental frequency.

When True RMS value parameter is unchecked, the block outputs the RMS value of the fundamental component of the input signal.

Parameters

True RMS value

Fundamental frequency (Hz):

Initial RMS value:

Sample time:

OK Cancel Help Apply

Sink Block Parameters: To Workspace

To Workspace

Write input to specified timeseries, array, or structure in a workspace. For menu-based simulation, data is written in the MATLAB base workspace. Data is not available until the simulation is stopped or paused.

To log a bus signal, use "Timeseries" save format.

Parameters

Variable name:

Limit data points to last:

Decimation:

Save format:

Save 2-D signals as:

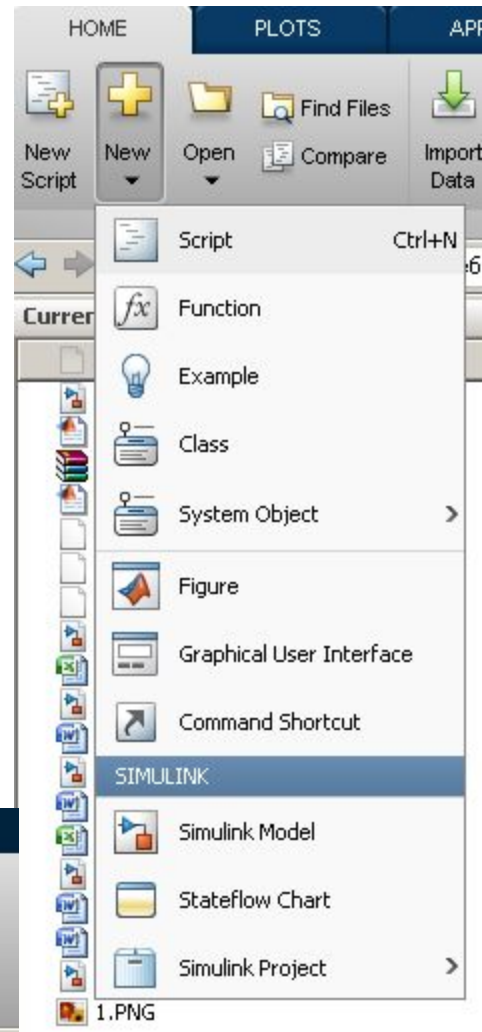
Log fixed-point data as a fi object

Sample time (-1 for inherited):

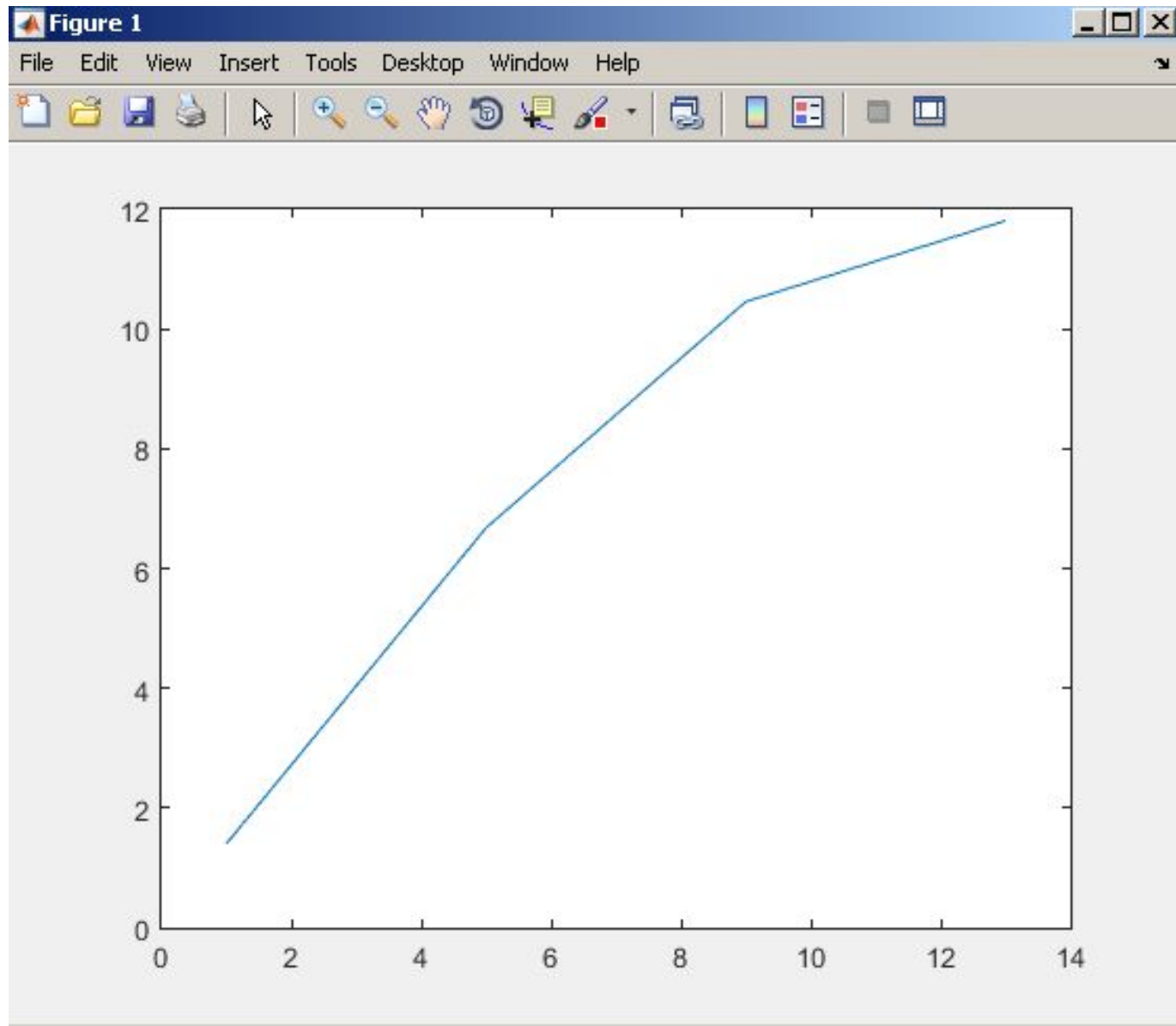
? OK Cancel Help Apply

Скрипт

- `open_system 'laba_2_1';`
- `j=0;`
- `for k=1:4:13`
- `j=j+1;`
- `set_param('laba_2_1/Constant1','value',num2str(k));`
- `sim 'laba_2_1';`
- `Res(j)=simout;`
- `end`
- `plot([1:4:13],Res(:));`



Результат



Определение параметра

- `get_param('obj', 'parameter')`
- Команда возвращает значение параметра `parameter`, для объекта, полный путь которого задан выражением `obj`.
- `'Value'` определяет значение параметра `Value`
- `ObjectParameters` определяет все атрибуты блока
- `DialogParameters` определяет параметры отображаемые в окне диалога блока

```
>> get_param('Laba_2_1/Constant1','DialogParameters')
```

```
ans =
```

```
          Value: [1x1 struct]
VectorParamsID: [1x1 struct]
          OutMin: [1x1 struct]
          OutMax: [1x1 struct]
OutDataTypeStr: [1x1 struct]
          LockScale: [1x1 struct]
          SampleTime: [1x1 struct]
          FramePeriod: [1x1 struct]
```

```
fx >> |
```


Несколько параметров

- `open_system 'Lab_1';`
- `i=0;`
- `for r=10:10:50`
- `i=i+1;`
- `j=0;`
- `set_param('Lab_1/Constant2','value',num2str(r));`
- `set_param('Lab_1/Series RLC Branch7','Inductance',num2str(r/400));`
- `for k=0.5:1:4.5`
- `j=j+1;`
- `set_param('Lab_1/Constant','value',num2str(k));`
- `set_param('Lab_1/Constant1','value',num2str(10-k));`
- `sim 'Lab_1';`
- `Res(i,j)=output;`
- `end`
- `plot([0.5:0.5:4.5],Res(i,:))`
- `hold on;`
- `end`

Задание

- Запустить схему из скрипта и получить результат измерения чего-либо в схеме
- Пере моделировать несколько раз изменяя какой-либо параметр в схеме
- Построить зависимость измеренных значений от изменяемого параметра средствами Matlab