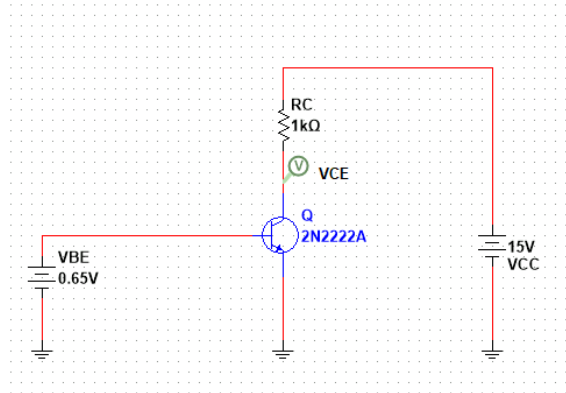# Lab 7

BJT Transistor Transfer Characteristics

Learning outcomes

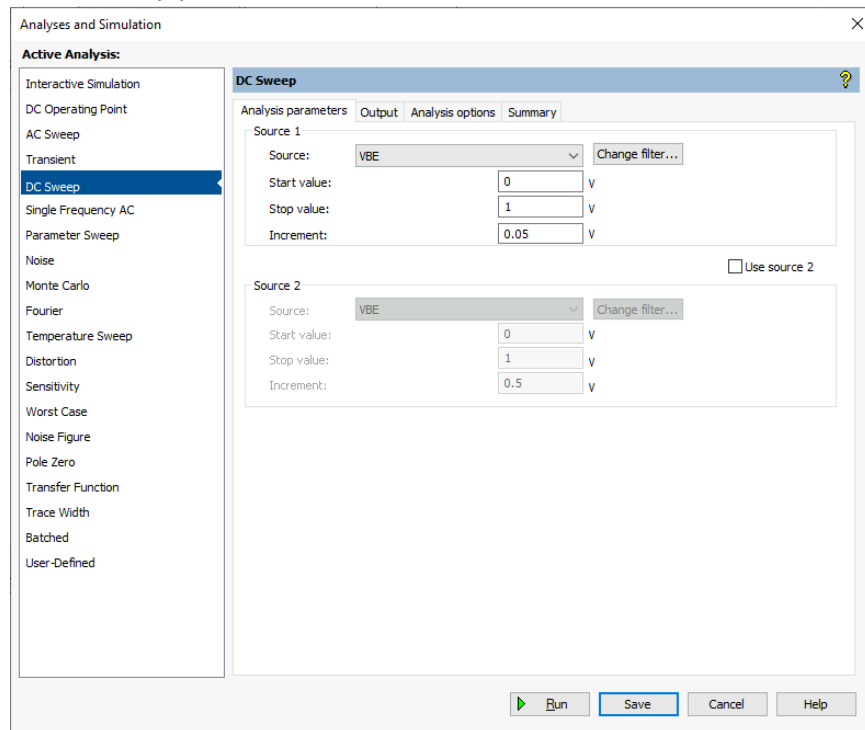1) Studying the transfer characteristics of BJT transistor (relation between V_{CE} & V_{BE})

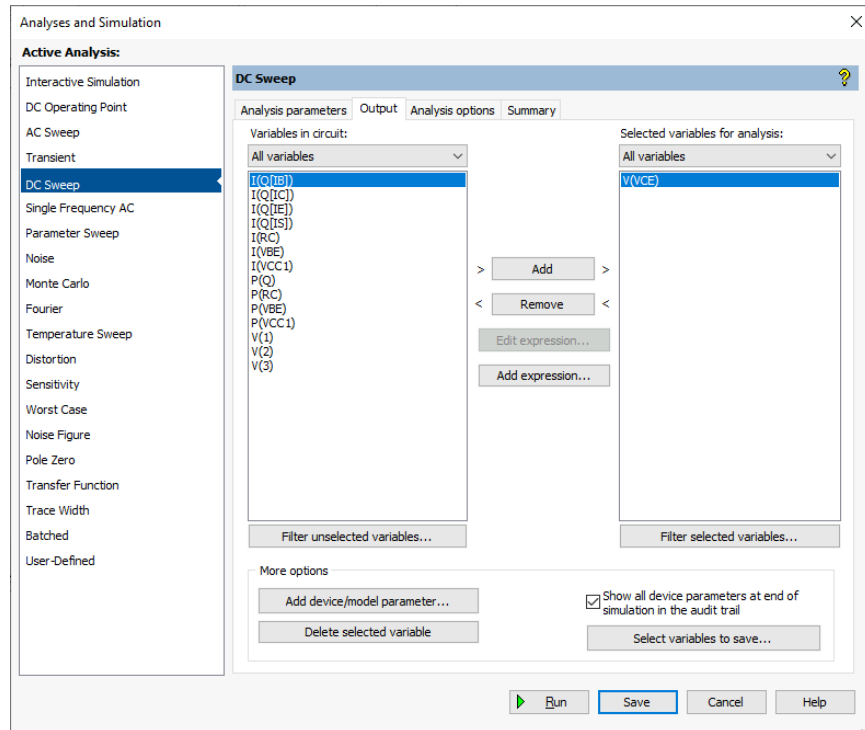**Experiment 1) Studying the relation between V_{CE} vs V_{BE}**

A) Create a new Multisim project and construct the circuit shown

B) Run sweep analysis as follows:
1. Set DC sweep parameters as shown below

Analyses and Simulation

Active Analysis:

Interactive Simulation	**DC Sweep**
DC Operating Point	Analysis parameters / Output / Analysis options / Summary
AC Sweep	
Transient	Variables in circuit:
DC Sweep	All variables
Single Frequency AC	I(Q[IB])
Parameter Sweep	I(Q[IC])
Noise	I(Q[IE])
Monte Carlo	I(Q[IS])
Fourier	I(RC)
Temperature Sweep	I(VBE)
Distortion	I(VCC1)
Sensitivity	P(Q)
Worst Case	P(RC)
Noise Figure	P(VBE)
Pole Zero	P(VCC1)
Transfer Function	V(1)
Trace Width	V(2)
Batched	V(3)
User-Defined	

Selected variables for analysis:
All variables
V(VCE)

> Add >
< Remove <
Edit expression...
Add expression...

Filter unselected variables...   Filter selected variables...

More options
Add device/model parameter...   ☑ Show all device parameters at end of simulation in the audit trail
Delete selected variable   Select variables to save...

▷ Run   Save   Cancel   Help

2. Click Run and export output to excel

3. In Excel plot V_{CE} vs V_{BE} and copy and paste the figure below here

Place holder for V_{CE} vs V_{BE} figure

4. Put your comments below here

Place holder for comments on Exp 1

1- When we can use Tr as switch
2- When we can use Tr as amplifier