Installation

We will need this library of matlab functions:

https://code.google.com/archive/p/yamlmatlab/downloads

1. Download and unpack it somewhere, e.g. 'C:\Users\username\my_lib\YAML'.

2. Add the codes and all subfolders to Matlab path by doing:

addpath(genpath('C:\Users\username\my_lib\YAML'))

3. Unpack CNTFET_simple.zip somewhere.

Ready!

Usage

"main.m" is the main script you will run. It can be changed to change output.

/inp is a folder with input files. "inp/settings.yaml" is a file with simulation parameters.

/fun is a folder with functions. Not relevant for user.

/out is folder with output. Output and transfer CNTFET characteristics will be saved here as *.fig.

Input parameters:

Designation here	In Matlab	Meaning [units]
U_{ds}	Uds	[V], 1D array
U_{gs}	Ugs	[V], 1D array
Δ	delta	Doping parameter [eV]. If positive, n-type doping, if negative, p-type. See fig. (a).
E_{11}	E11	band gap [eV]
E_{22}	E22	"second band gap" [eV], see fig.
T	T	Temperature [K]
α_{ds}	alpha_Uds	Coefficient in $U_{ds} = -\alpha_{ds} * V_{ds}$ [eV] Accounts resistance other than quantum.
α_{gs}	alpha_Ugs	Coefficient in $U_{gs} = -\alpha_{gs} * V_{gs}$ [eV] Accounts gate control imperfection
-	Tol	Default value: 1E-15 [eV].

Related parameters

V_{ds}	Vds	[eV], 1D array. Connection with a voltage: $U_{ds} = -\alpha_{ds} * V_{ds}$ [eV]
V_{gs}	Vgs	[eV], 1D array Connection with a voltage: $U_{gs} = -\alpha_{gs} * V_{gs}$ [eV]

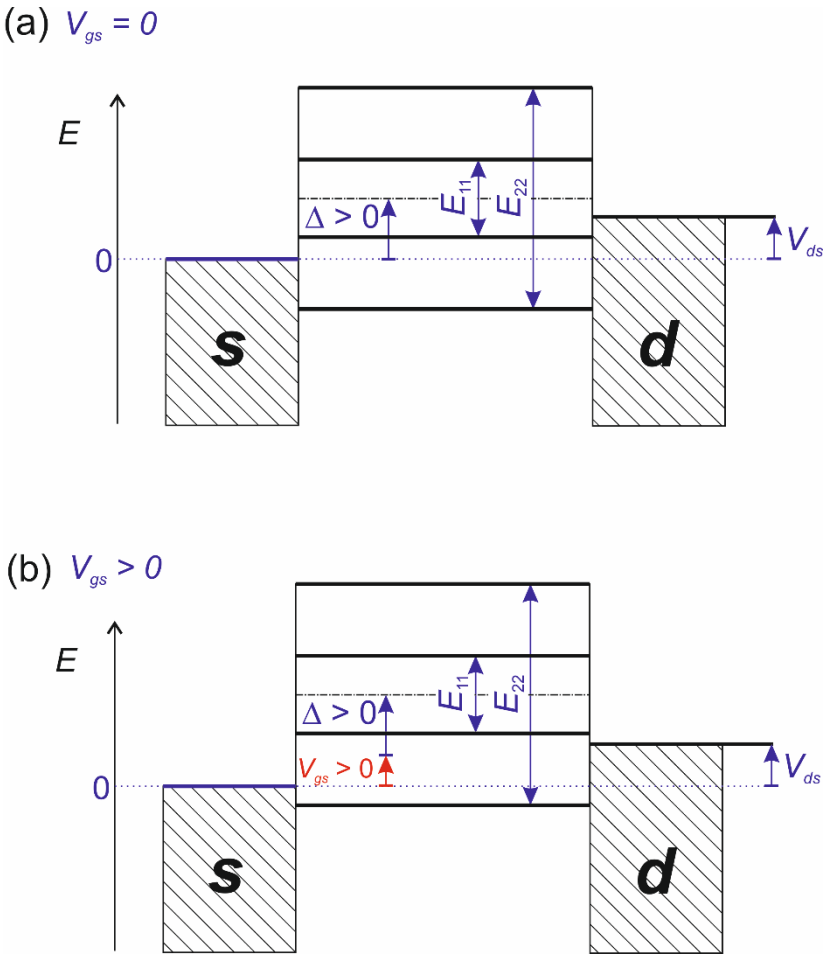

Fig. Parameters: (a) shown for $V_{gs} = 0$. (b) $V_{gs} > 0$.