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# -*- coding: utf-8 -*-
"""
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This will be the interface where students can run all the microscope commands/experiments.
It will run nv_control_panel with the inputted parameters

"""
import
import          as
import          as
import          as
from          import
import
import          as
import          as

# %%
if      "__main__"

# %%%%%%%%%%%%% NV Parameters %%%%%%%%%%%%%

        6 16  2 436  3 75  # V
            10 # kcps
        0  # deg

            2 783      # GHz
55 46      # ns
            15      # dBm  15.5 max

            2 959      # GHz
100 9      # ns
            14 5      # dBm  14.5 max

#%# Prepare nv_sig with nv parameters (do not alter nv_sig)

        9
        "E6"
        "cobolt_515"

"coords"

"name"  "{}-nv1"          "disable_opt" False "ramp_voltages" False
"spin_laser"
"spin_laser_power"
"spin_pol_dur"  1e4
"spin_readout_laser_power"
"spin_readout_dur"  350
'norm_style'

"imaging_laser"
"imaging_laser_power"
"imaging_readout_dur"  1e7  "collection_filter"  "630_Lp"

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"expected_count_rate"
"magnet_angle"

"resonance_LOW"          "rabi_LOW"          "uwave_power_LOW"
"resonance_HIGH"        "rabi_HIGH"         "uwave_power_HIGH"

# %% %%%%%%%%%%% Experimental section %%%%%%%%%%%

try

##### Useful global functions #####
### Get/Set drift
# nv.set_drift([0,0,0])
# nv.reset_xy_drift()
# nv.reset_xyz_drift()
# print(nv.get_drift())
# nv_sig['disable_opt']=True
# nv.do_stationary_count(nv_sig)

### Turn laser on or off
# tool_belt.laser_on_no_cxn('cobolt_515') # turn the laser on
# tool_belt.laser_off_no_cxn('cobolt_515') # turn the laser on

##### EXPERIMENT 0: Finding an nv #####
### Take confocal image
### xy scans can be ['small', 'medium', 'big-ish', 'big', 'huge']
# nv.do_image_sample(nv_sig, scan_size='small')
# nv.do_image_sample(nv_sig, scan_size='medium')
# nv.do_image_sample(nv_sig, scan_size='big')
# nv.do_image_sample(nv_sig, scan_size='big-ish')
# nv.do_image_sample(nv_sig, scan_size='huge')

# Optimize on NV
# nv.do_optimize(nv_sig)

##### EXPERIMENT 1: CW electron spin resonance #####
### Measure CW resonance
# mangles = [0,30,60,90,120,150]
# nv.do_resonance(nv_sig, freq_center=2.87, freq_range=0.2, uwave_power=-15.0, num_runs=15)

##### EXPERIMENT 2: Rabi oscillations #####
# mpowers = [-10,-8,-6,-4,-2,0,2,4,6,8,10,12,14,15]
# for i in mpowers:
#     nv_sig["uwave_power_LOW"]=i
# nv.do_rabi(nv_sig, States.LOW, uwave_time_range=[0, 200], num_runs=15, num_steps=51, num_avg=10)
# nv.do_rabi(nv_sig, States.HIGH, uwave_time_range=[0, 200], num_runs=20, num_steps=51, num_avg=10)

##### EXPERIMENT 3: Ramsey experiment #####

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# nv.do_ramsey(nv_sig, state=States.LOW, precession_time_range = [0, 2000], set_detuning=4,

# ##### EXPERIMENT 4: Spim echo #####
# nv.do_spin_echo(nv_sig, state=States.LOW, echo_time_range = [0, 100000],
#                 num_runs=150, num_steps=41, num_reps=2e4)

finally

# Make sure everything is reset
```