

a. Labscript experimental sequence

```
start()
t = 0
D01_15.go_high(0)
oven.go_high(0)
# MOT
t += MOT_load(t)

if MOT_ONLY:
    t += MOT_hard_off(t)
else:
    MOT_load_off(t)
    t += bias_fields_ramp(t)
    t += 10e-6
    t += wait(label='MOT_wait', t=t, timeout=1) + 100*us

# Subdoppler
t += cMOT(t)
t += molasses_ramp(t)
t += depump(t)
t += blow_away(t)
#
# # Magnetic trap evaporation
t += magnetic_trap(t)
t += compress(t)
t += rf_evap(t)

# Dipole evaporation
t += dipole_load(t)
t += split(t)
t += evap1(t)
t += quad_off(t)
t += evap2(t)

# TOF
t += TOF_init_insitu(t)
t += abs_imaging(t, XY_Flea3, direction='xy', img_delay=30*ms,
                imgs=['atoms', 'probe', 'dark'])

t += MOT_cooldown_time
t += MOT_load(t, Duration=0.1)
stop(t+1*ms, min_time=t+1.0)
```

b. Sample functions

```
def bias_fields_ramp(t):

    #Device 2
    probe_A0.constant(t, -0.07)

    ramp_time = 100*ms
    sample_rate = 1/(1*ms)

    #Device 3
    X_bias.customramp(t, ramp_time, LineRamp, MOT_x_bias, cMOT_x_bias,
                      samplerate=sample_rate, units='A')
    Y_bias.customramp(t, ramp_time, LineRamp, MOT_y_bias, cMOT_y_bias,
                      samplerate=sample_rate, units='A')
    Z_bias.customramp(t, ramp_time, LineRamp, MOT_z_bias, cMOT_z_bias,
                      samplerate=sample_rate, units='A')

    return ramp_time

def cMOT(t):

    ramp_time = 30*ms
    sample_rate = 1/(500*us)

    #Device 1
    quadrupole.customramp(t, ramp_time, LineRamp, MOT_quad_current,
                          cMOT_quad_current, samplerate=sample_rate, units='A')
    # quadrupole_TTL.go_high(t)

    #Device 2
    MOT_repump_A0.customramp(t, ramp_time, LineRamp, cMOT_repump_power_start,
                             cMOT_repump_power_end, samplerate=sample_rate)

    #Novatechs
    cooling_lock.setfreq(t, cMOT_cooling_freq*MHz)

    return ramp_time

def molasses_ramp(t):

    #Device 1
    quadrupole.constant(t, -5, units='A')
```