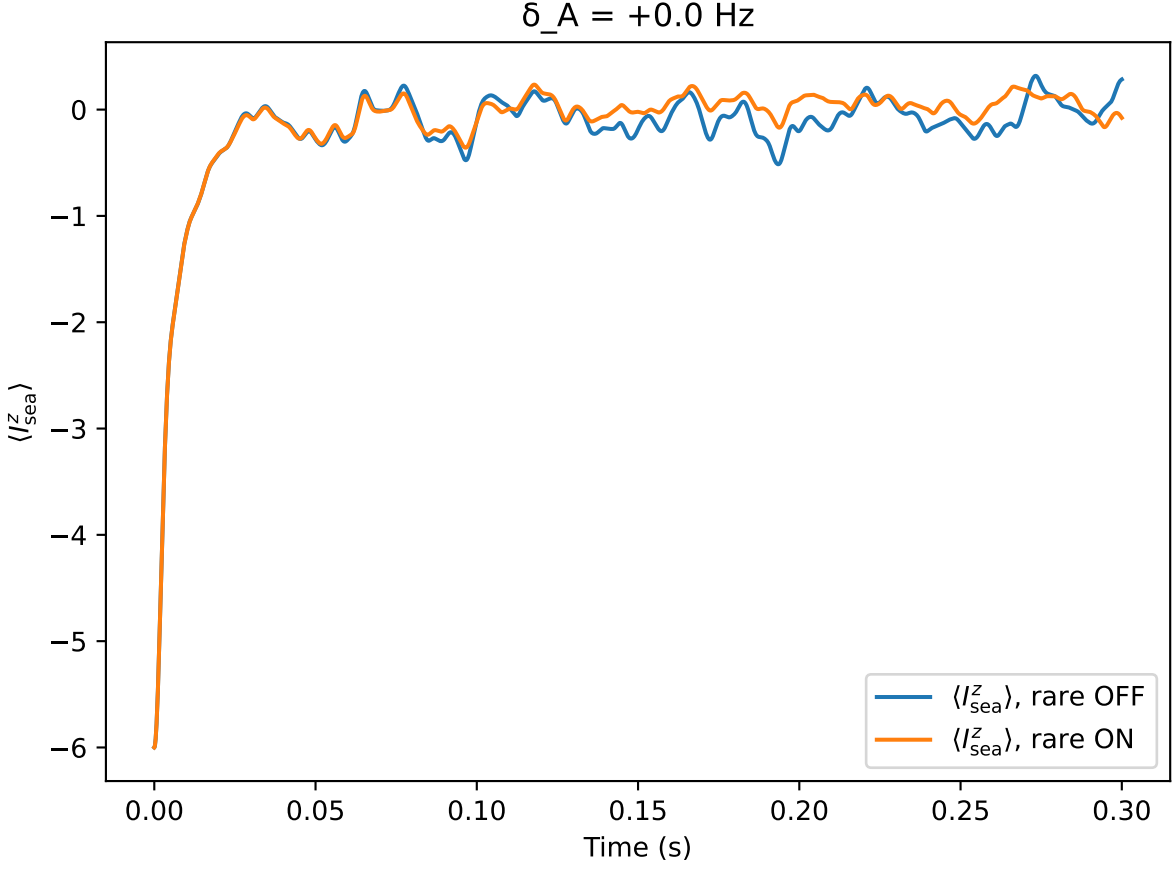
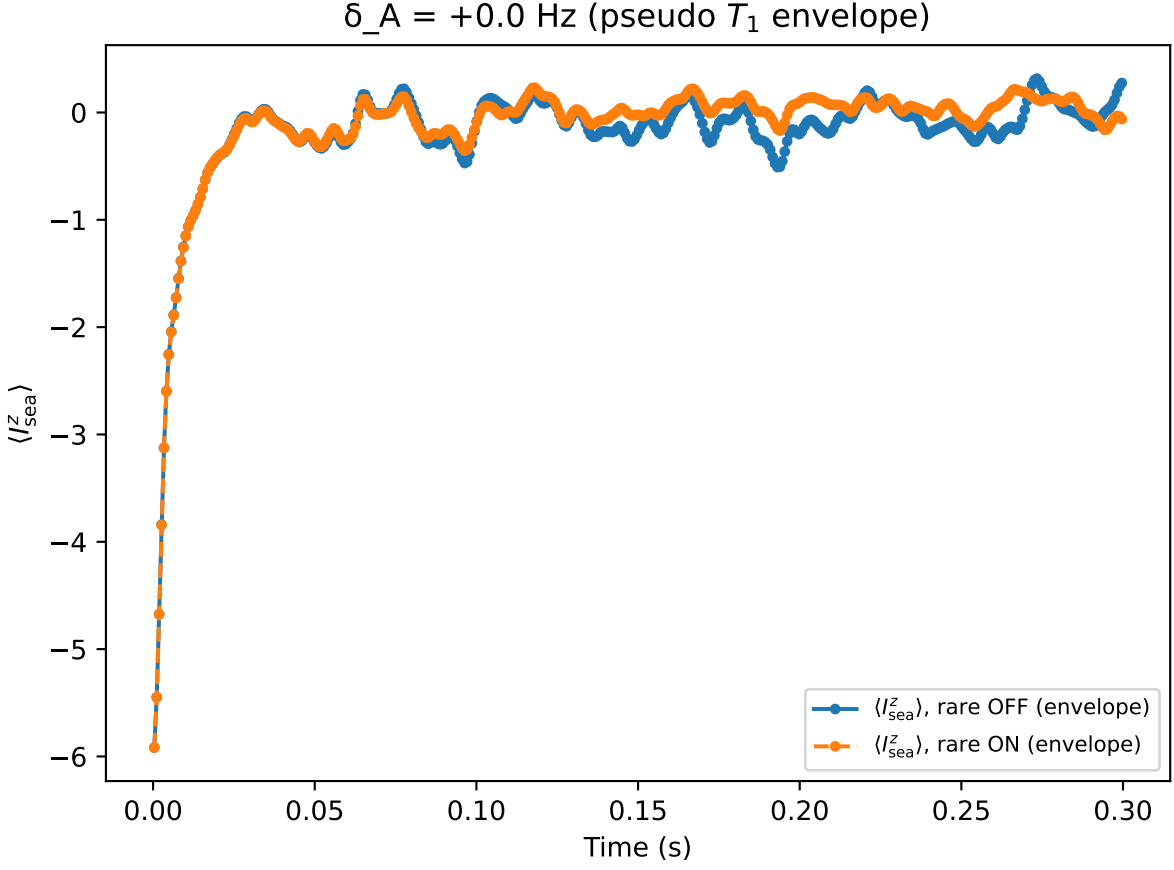
Sea detuning sweep report (Ga sea / Al rare)

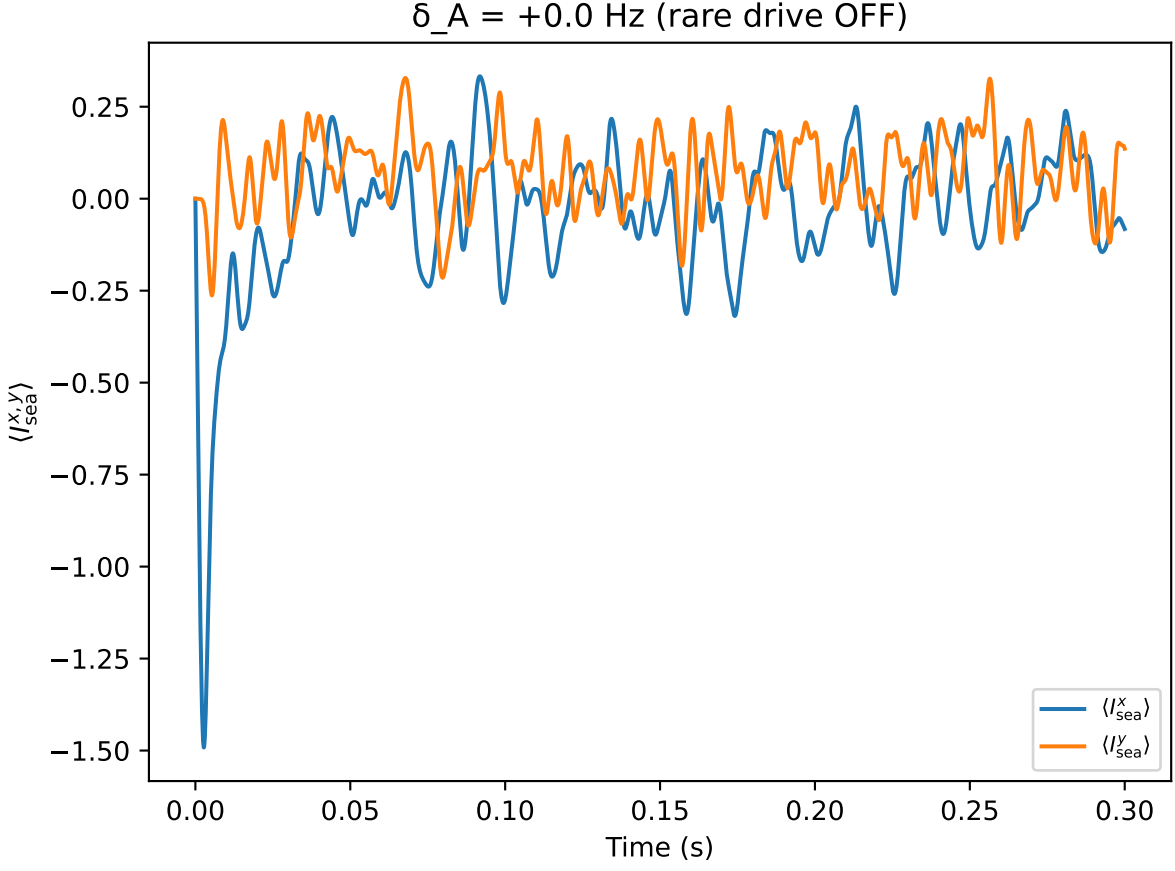
Global parameters (constant across sweep):

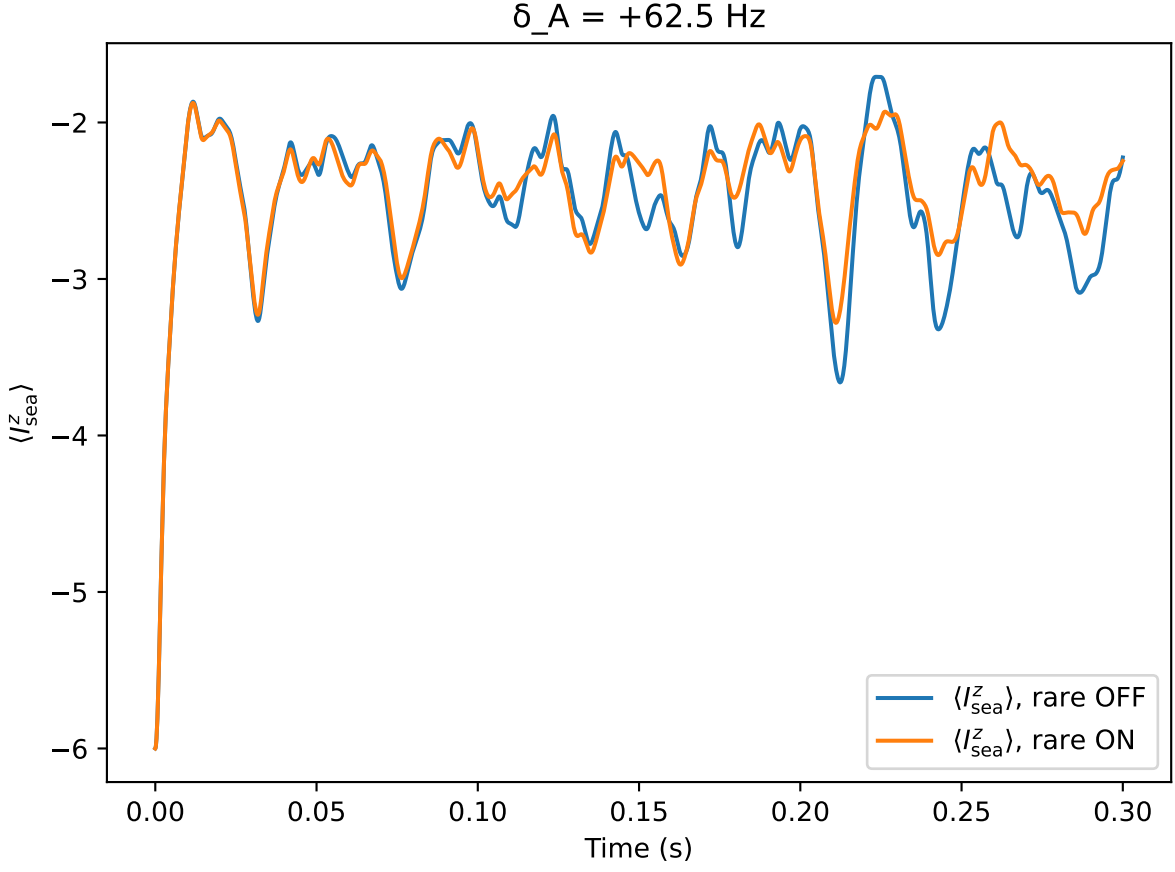
f_Az (sea Larmor)	= 39.062 MHz
f_Rz (rare Larmor)	= 33.308 MHz
f1A (sea Rabi)	= 0.020 kHz
f1R (rare Rabi)	= 0.010 kHz
gamma_sea	= 8.181e+07 rad·s⁻¹·T⁻¹
gamma_rare	= 6.976e+07 rad·s⁻¹·T⁻¹
B0_common	= 3.000 T
B1_sea	= 1.536e-06 T
B1_rare	= 9.007e-07 T
dipolar_scale_SI	= 1.055e-41
shell_scale	= 0.300 nm
t_final	= 3.000e-01 s
steps	= 20000
n_sea	= 12
phi_sea	= 1.571 rad
phi_rare	= 1.571 rad
sea_spin_type	= 1/2
rare_spin_type	= 1/2

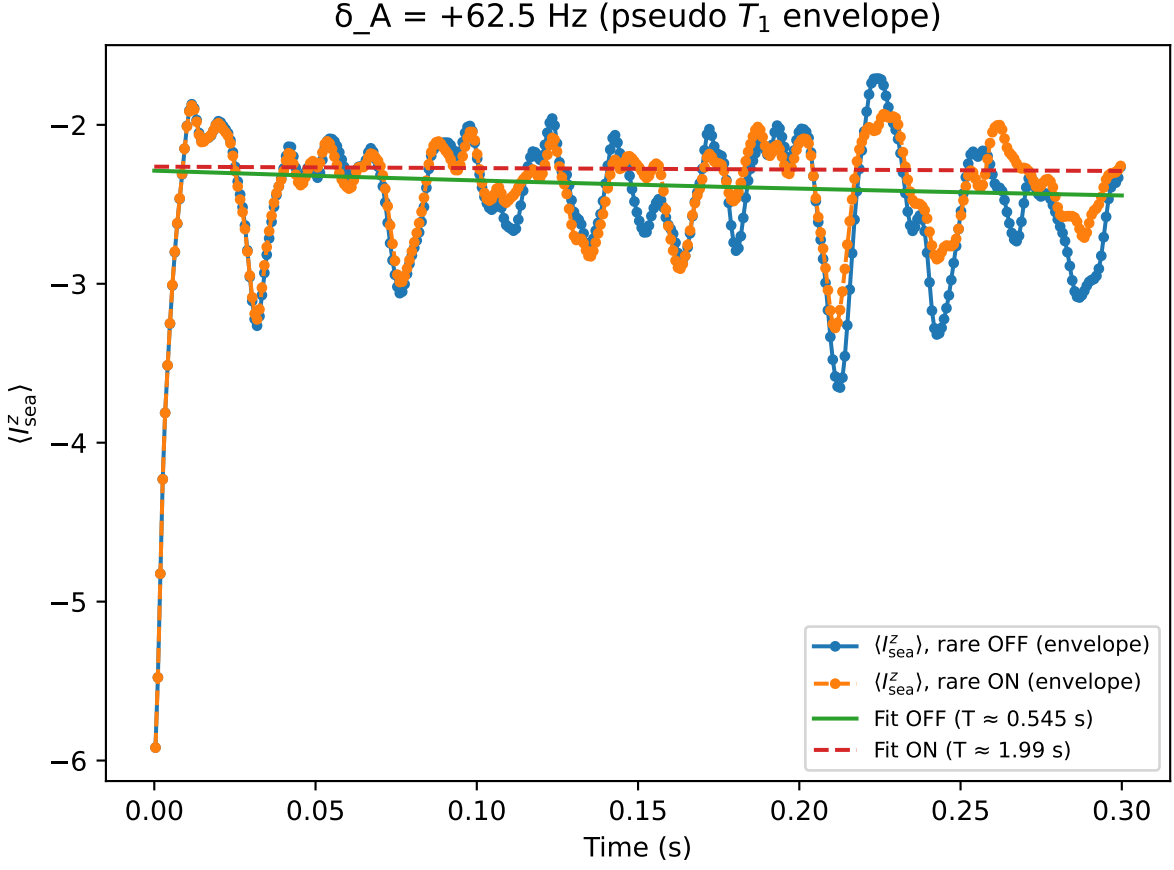
Sea detunings (δ_A = f_Az - f_rf,A) in Hz:
  +0.0, +62.5, +125.0, +187.5, +250.0, +312.5, +375.0, +437.5, +500.0

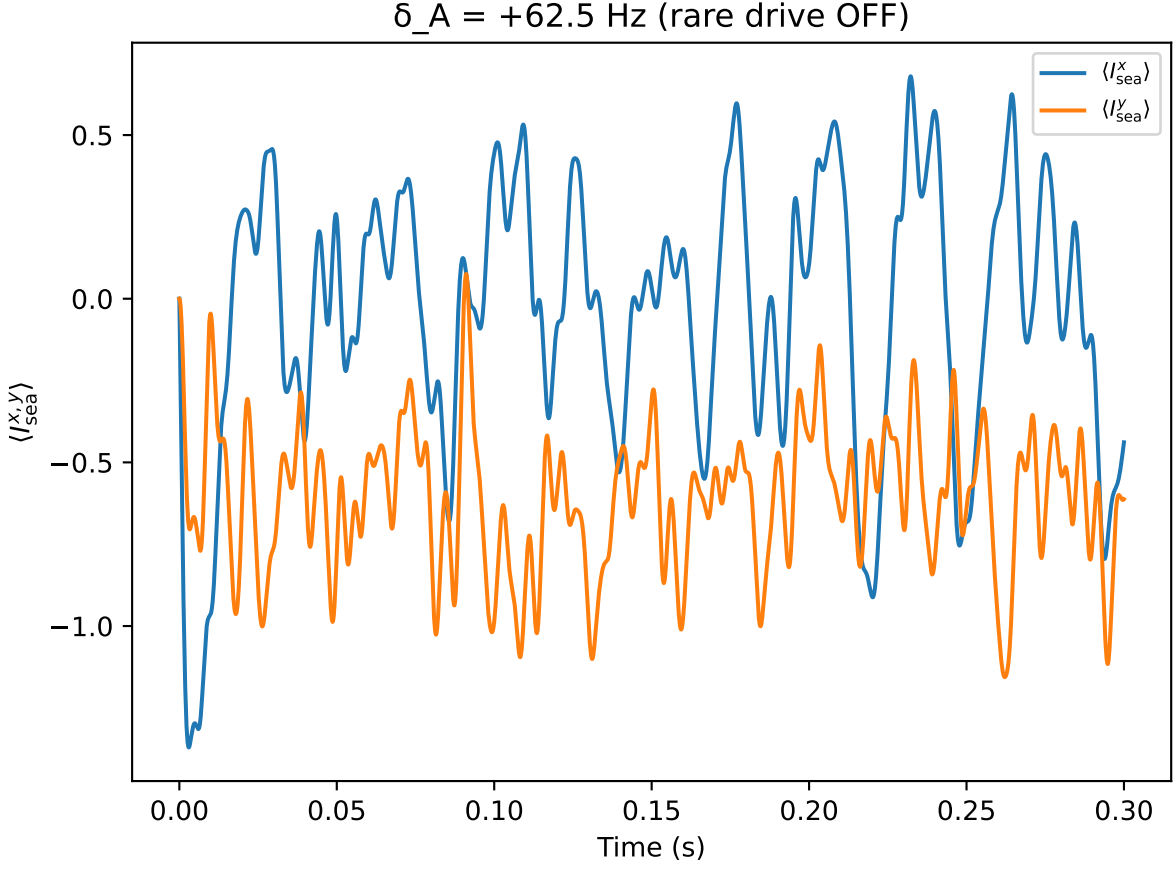

δ_A = +0.0 Hz
0
−1
−2
−3
−4
−5
−6
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF
$\langle I^z_{sea} \rangle$, rare ON

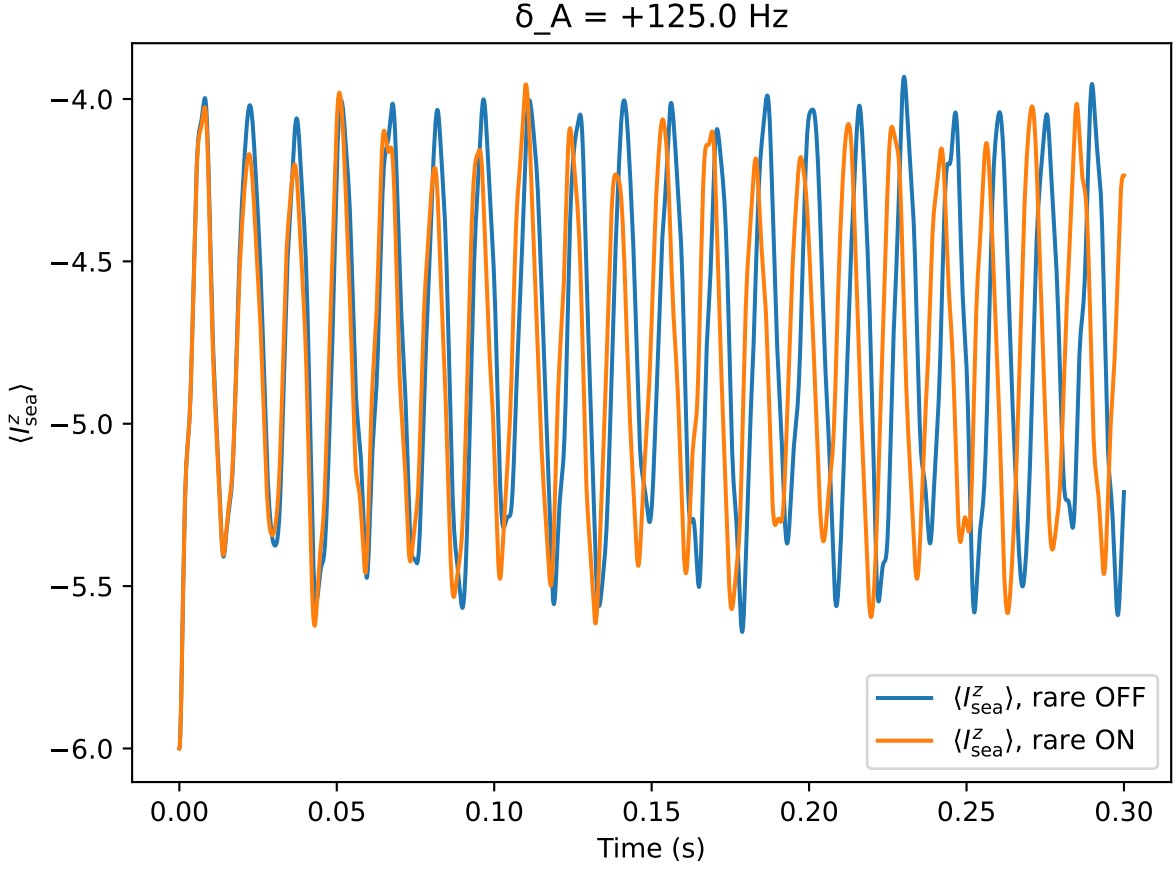

δ_A = +0.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
0
−1
−2
−3
−4
−5
−6
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)

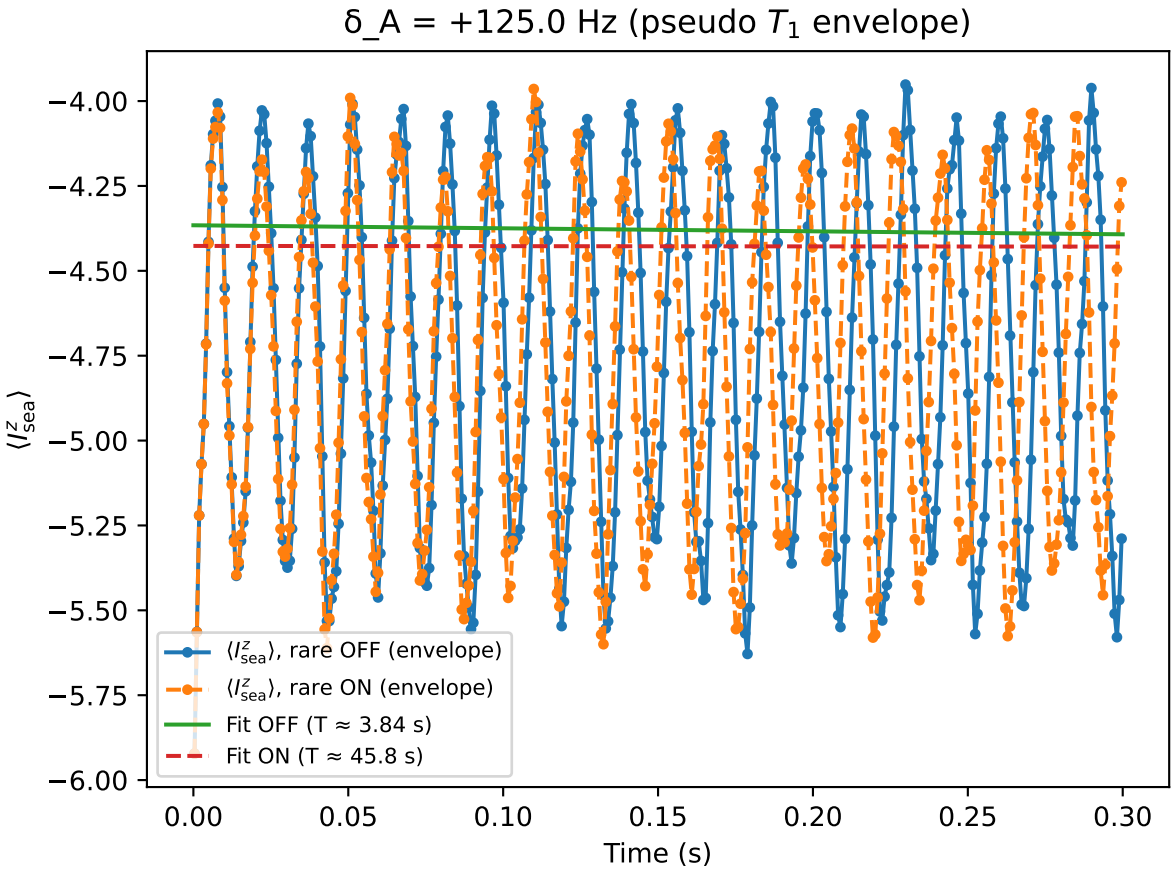

δ_A = +0.0 Hz (rare drive OFF)
0.25
0.00
−0.25
−0.50
−0.75
−1.00
−1.25
−1.50
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$

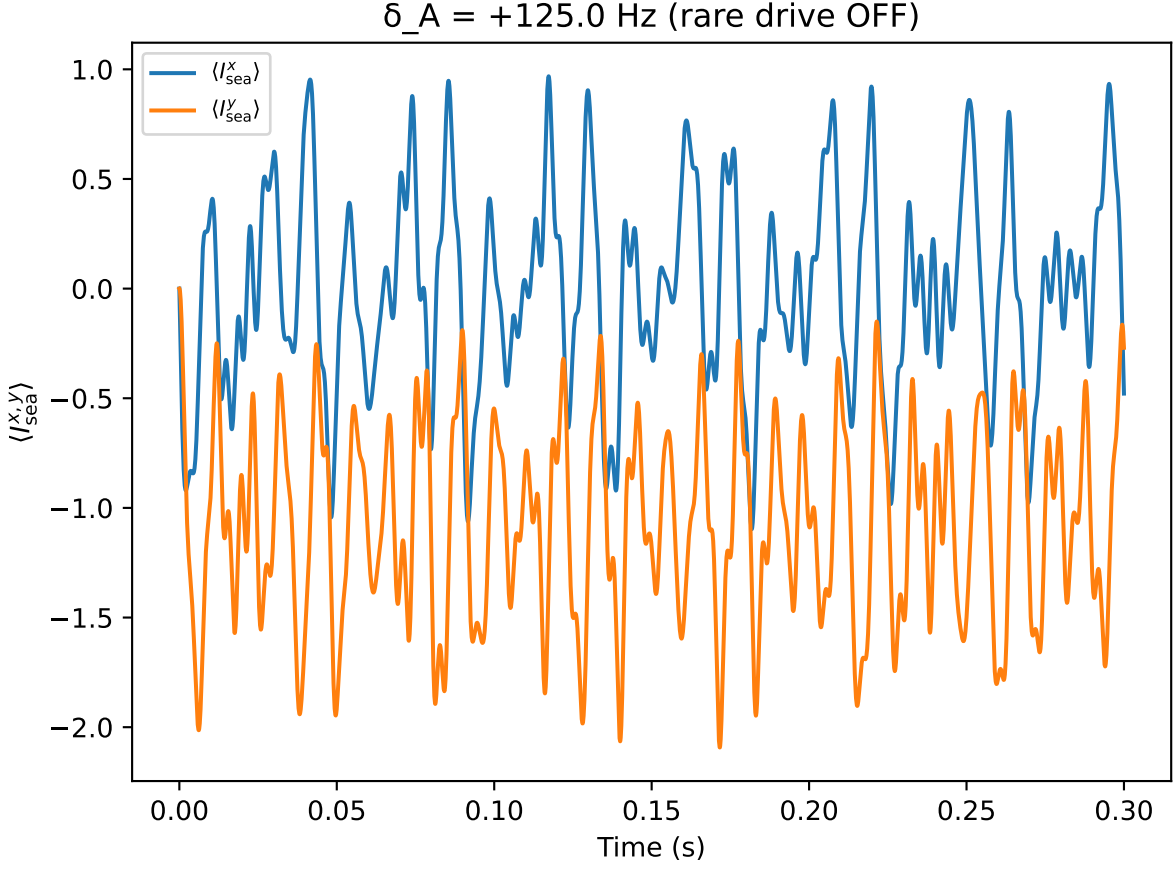

δ_A = +62.5 Hz
−2
−3
−4
−5
−6
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF
$\langle I^z_{sea} \rangle$, rare ON

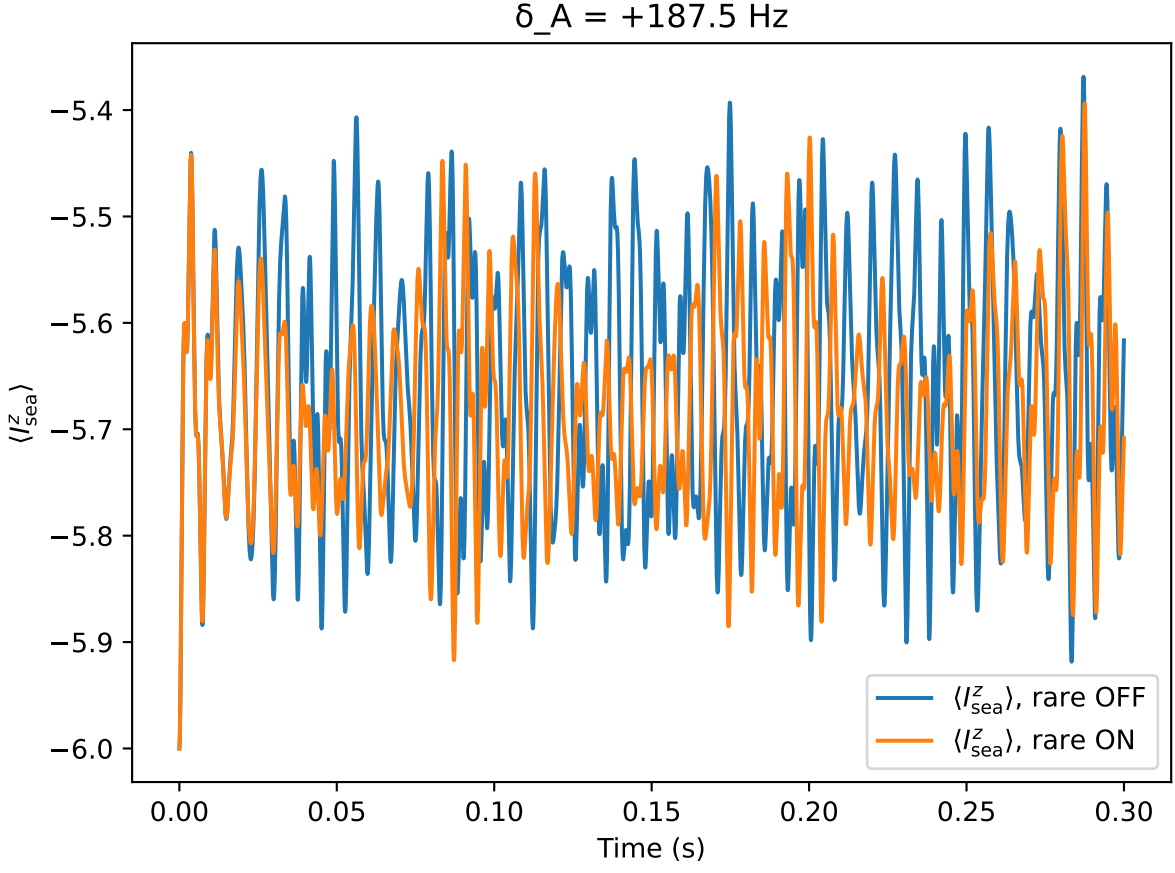

δ_A = +62.5 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
−2
−3
−4
−5
−6
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.545 s)
Fit ON (T ≈ 1.99 s)

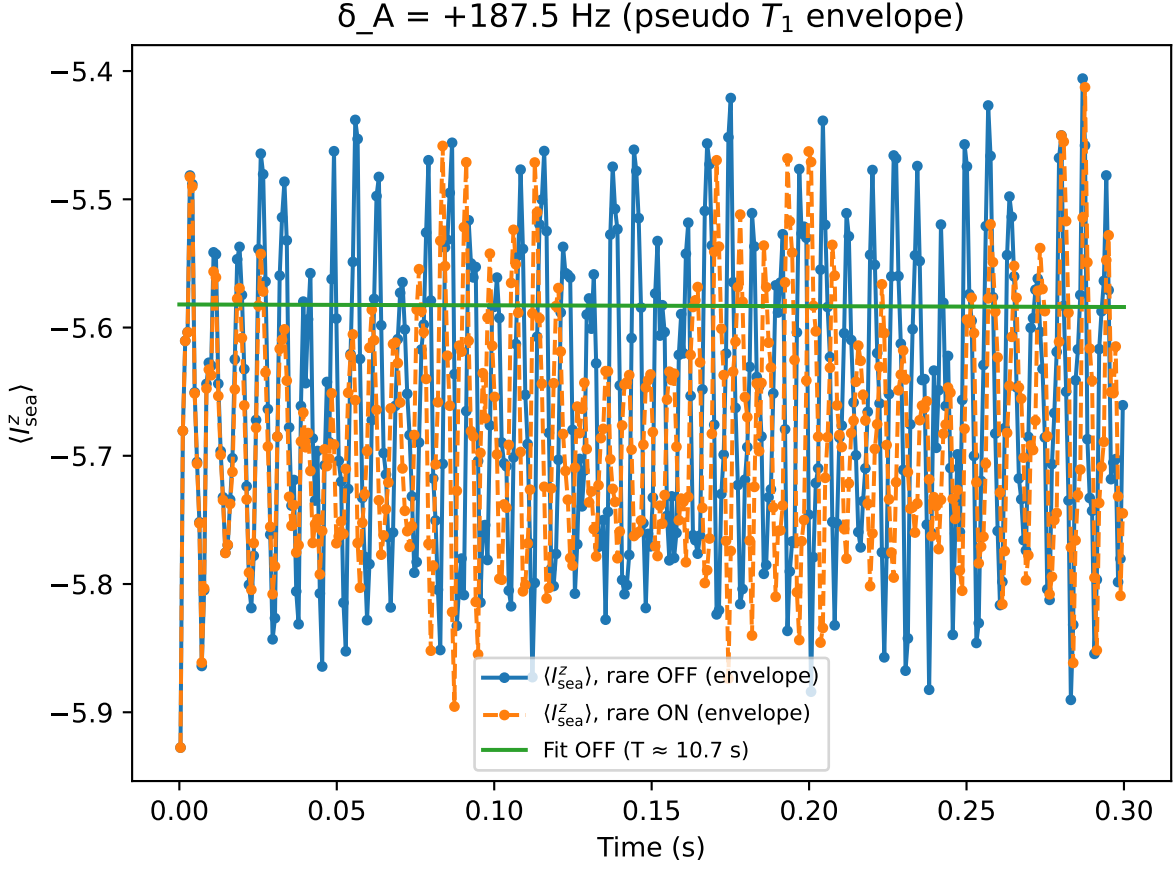

δ_A = +62.5 Hz (rare drive OFF)
$\langle I^x_{\mathrm{sea}} \rangle$
$\langle I^y_{\mathrm{sea}} \rangle$
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
0.5
0.0
−0.5
−1.0
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

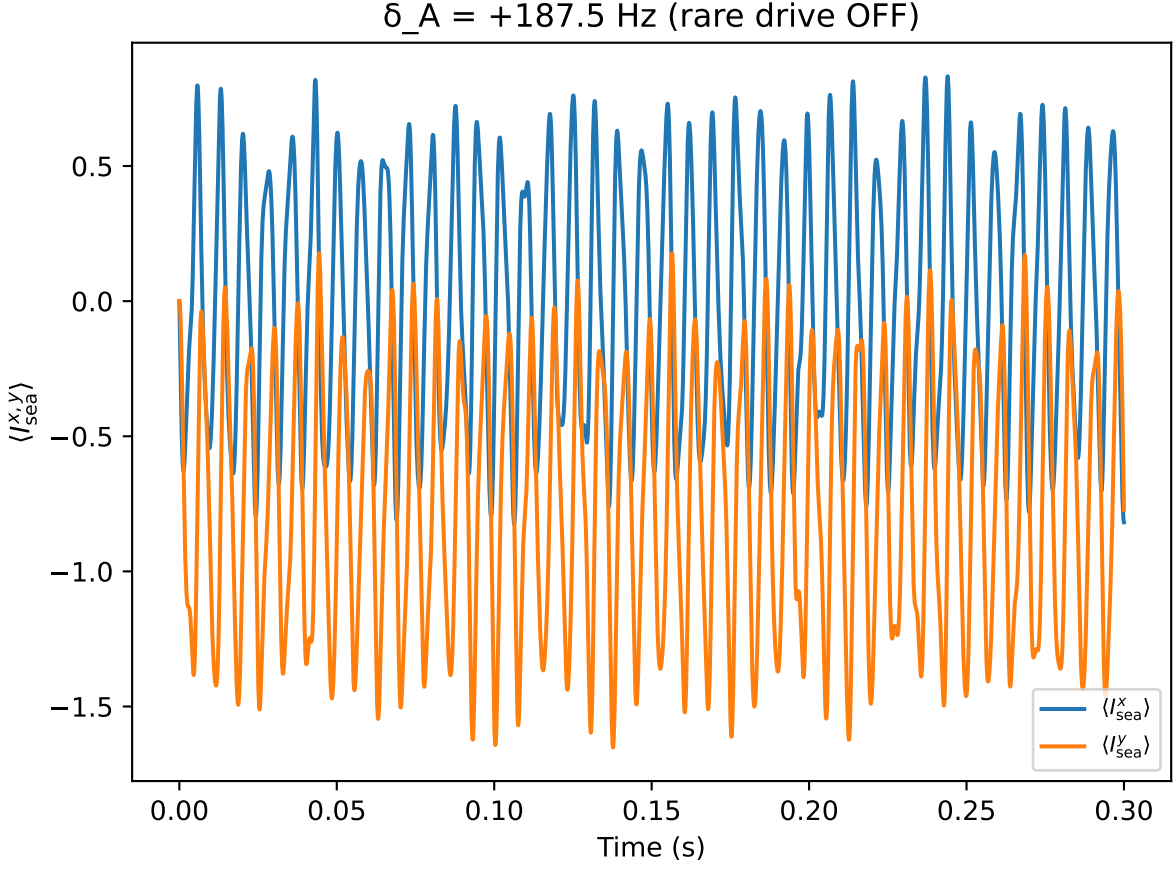

δ_A = +125.0 Hz
−4.0
−4.5
−5.0
−5.5
−6.0
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF
$\langle I^z_{sea} \rangle$, rare ON

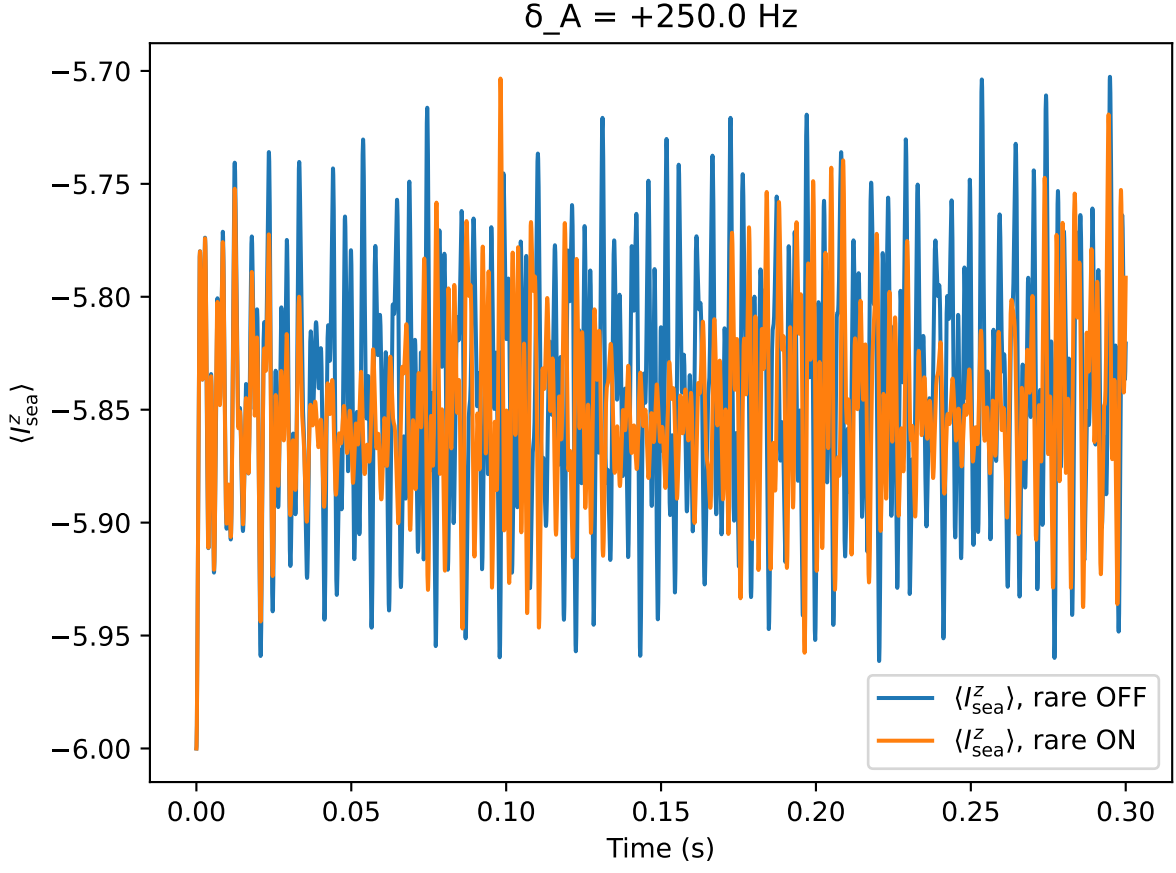

δ_A = +125.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
−4.00
−4.25
−4.50
−4.75
−5.00
−5.25
−5.50
−5.75
−6.00
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 3.84 s)
Fit ON (T ≈ 45.8 s)

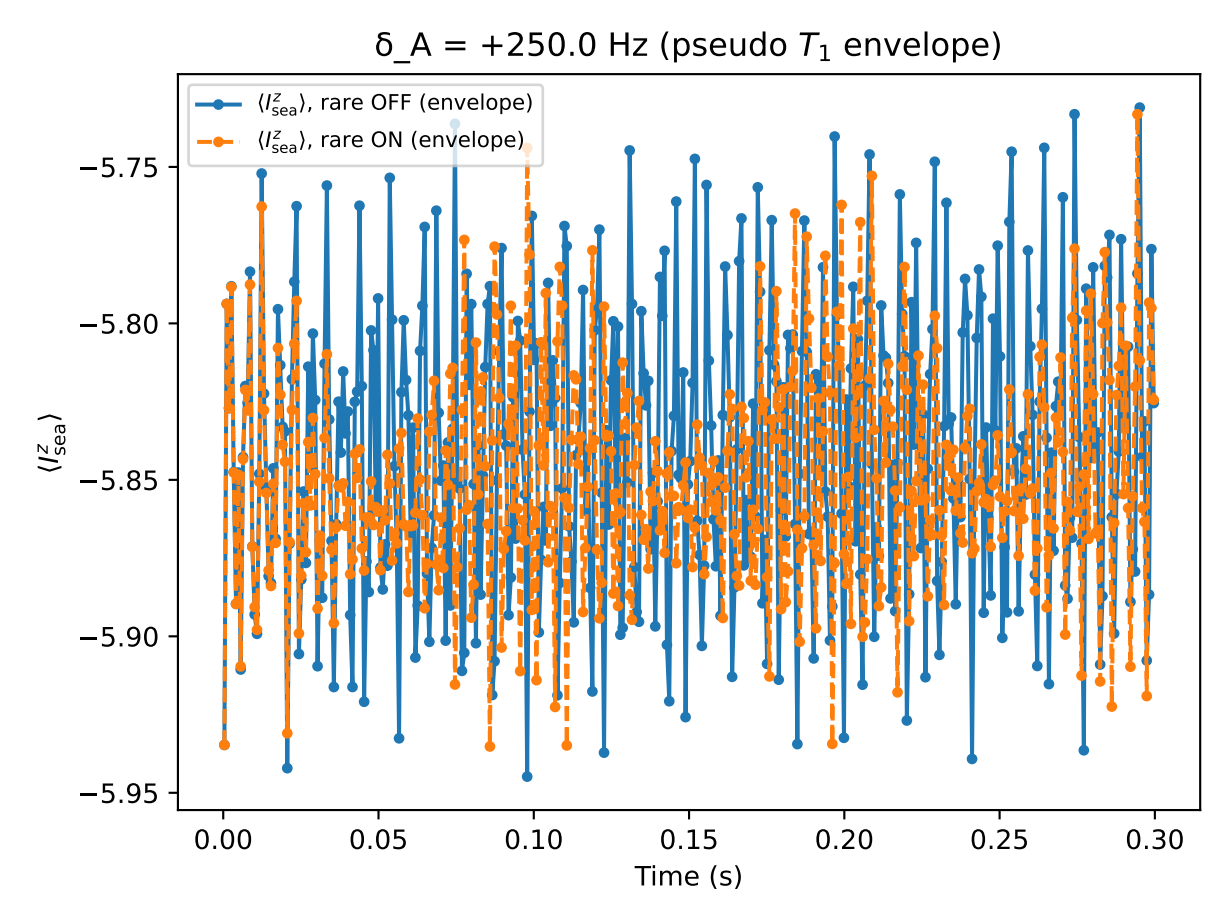

δ_A = +125.0 Hz (rare drive OFF)
⟨I^x_sea⟩
⟨I^y_sea⟩
⟨I^{x,y}_sea⟩
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

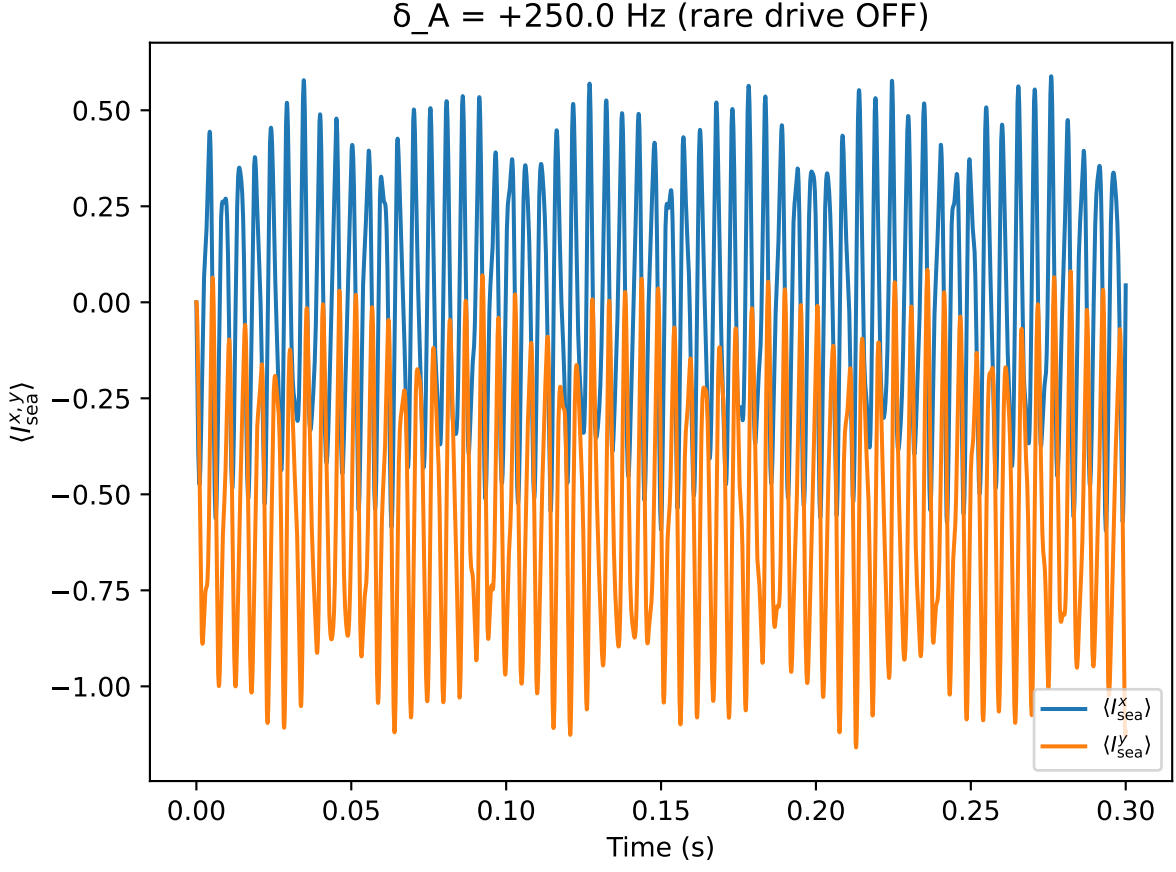

δ_A = +187.5 Hz
−5.4
−5.5
−5.6
−5.7
−5.8
−5.9
−6.0
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON

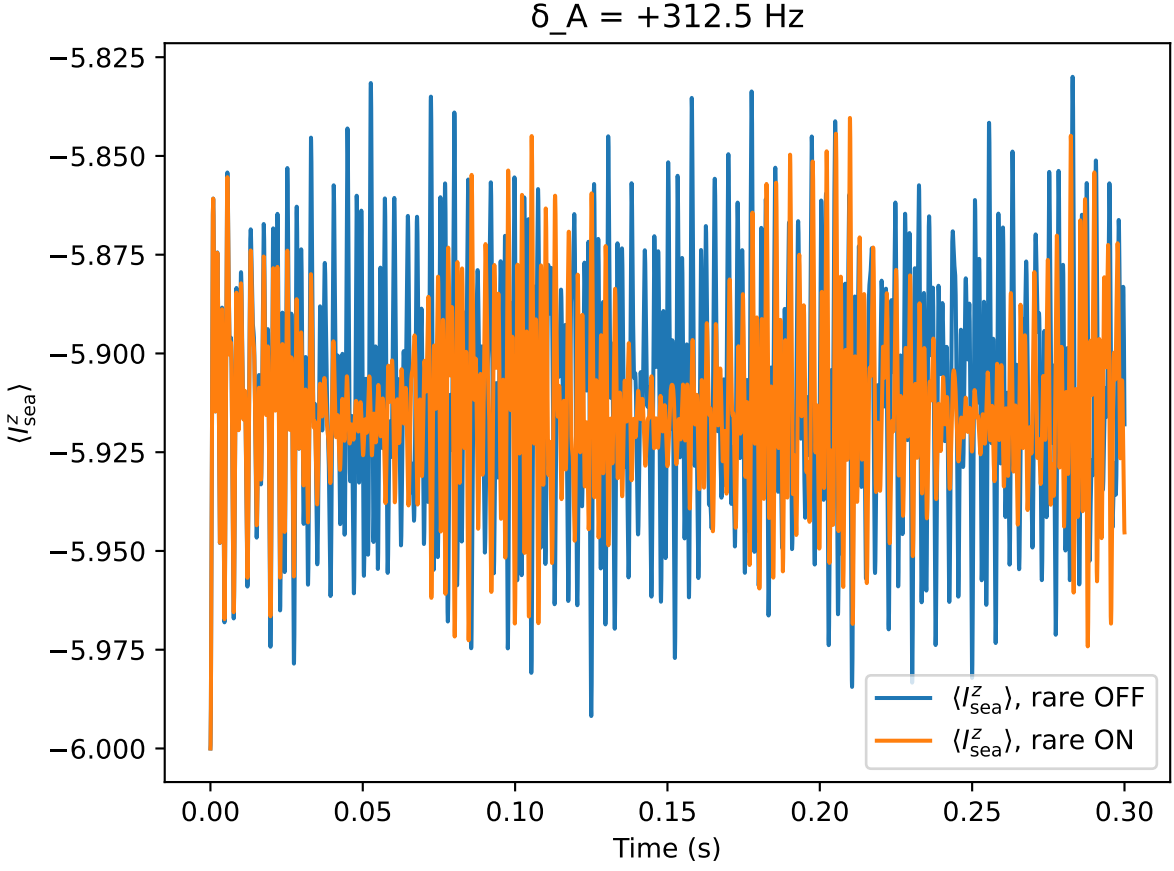

δ_A = +187.5 Hz (pseudo T_1 envelope)
−5.4
−5.5
−5.6
−5.7
−5.8
−5.9
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 10.7 s)

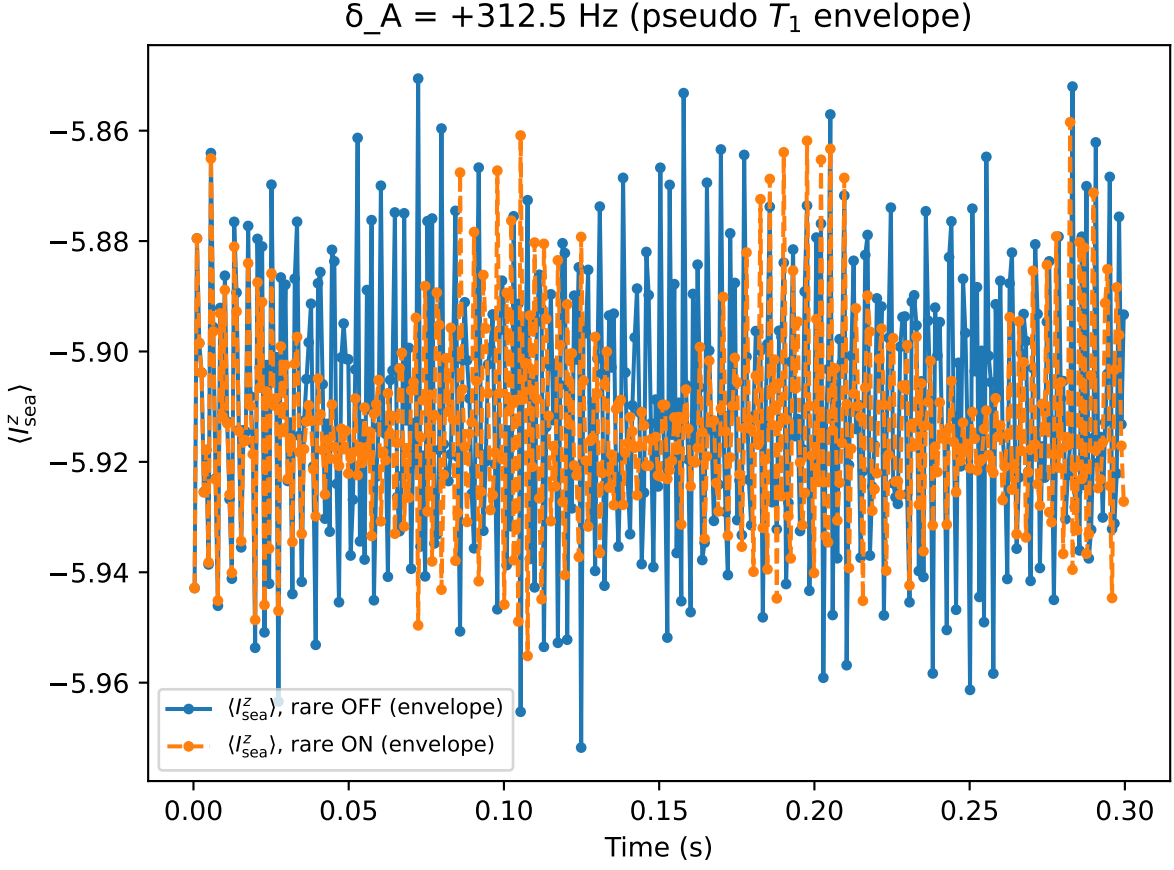

δ_A = +187.5 Hz (rare drive OFF)
0.5
0.0
−0.5
−1.0
−1.5
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$

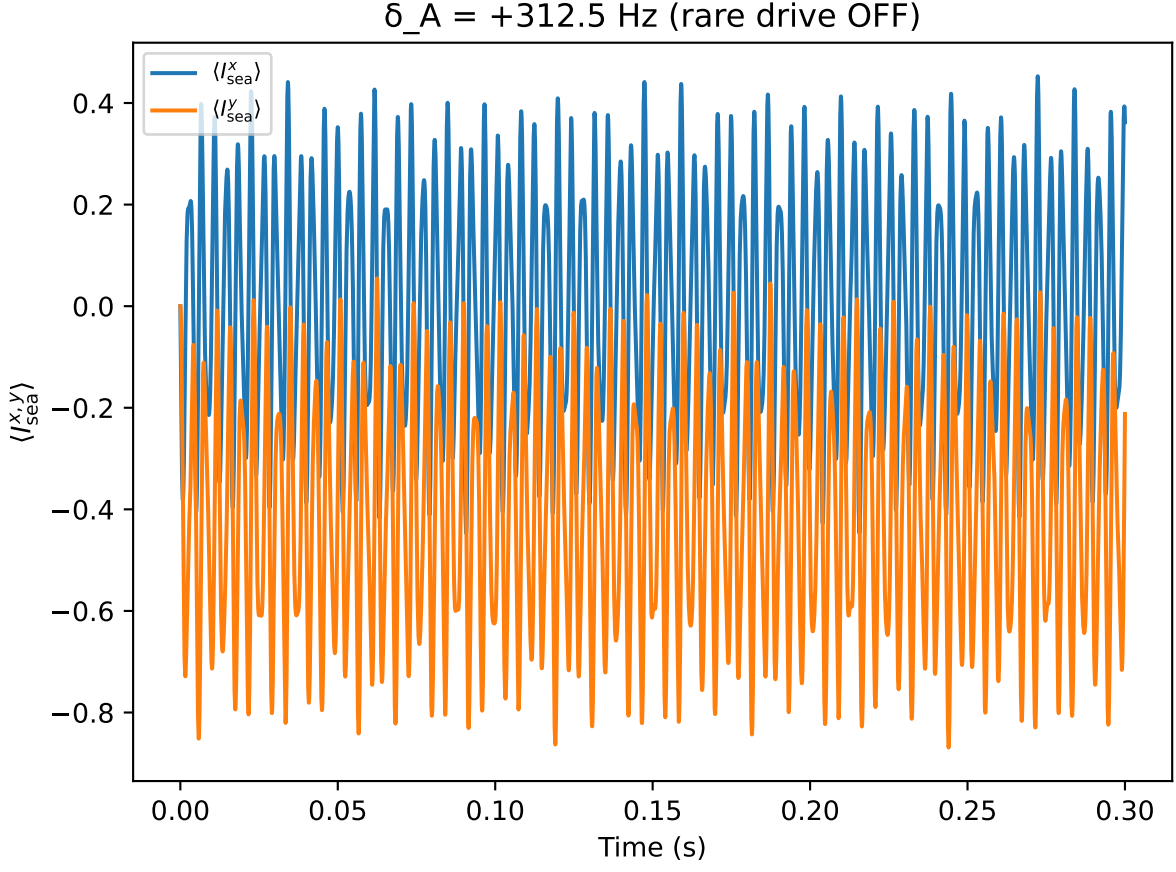

δ_A = +250.0 Hz
−5.70
−5.75
−5.80
−5.85
−5.90
−5.95
−6.00
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON

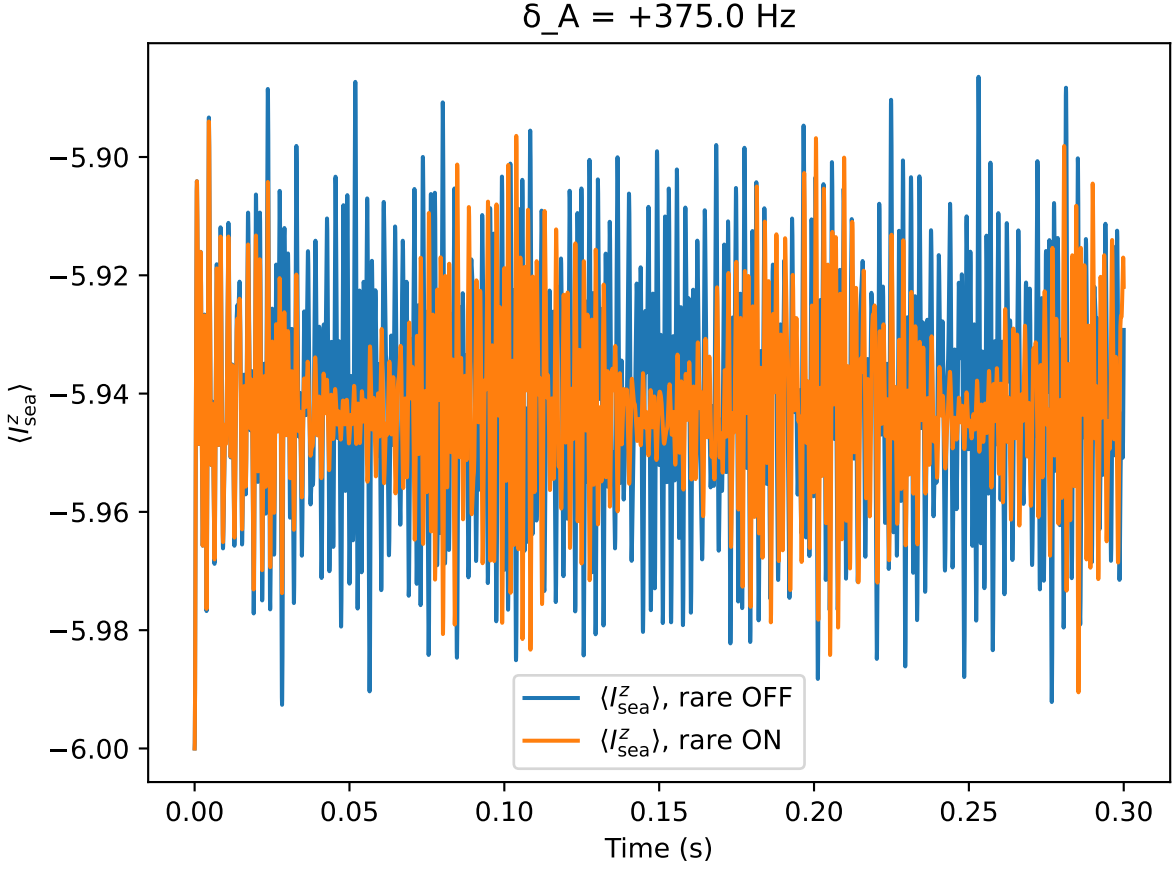

δ_A = +250.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
−5.75
−5.80
−5.85
−5.90
−5.95
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

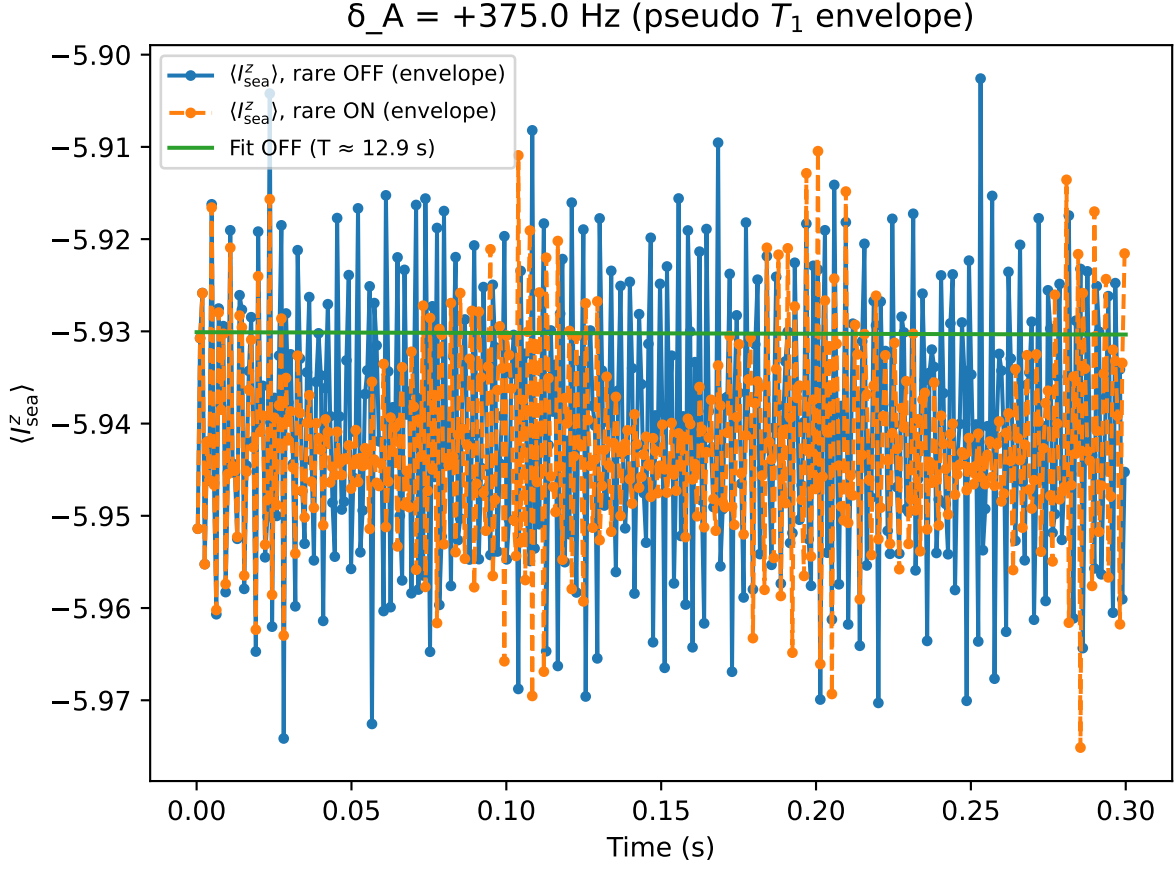

δ_A = +250.0 Hz (rare drive OFF)
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$

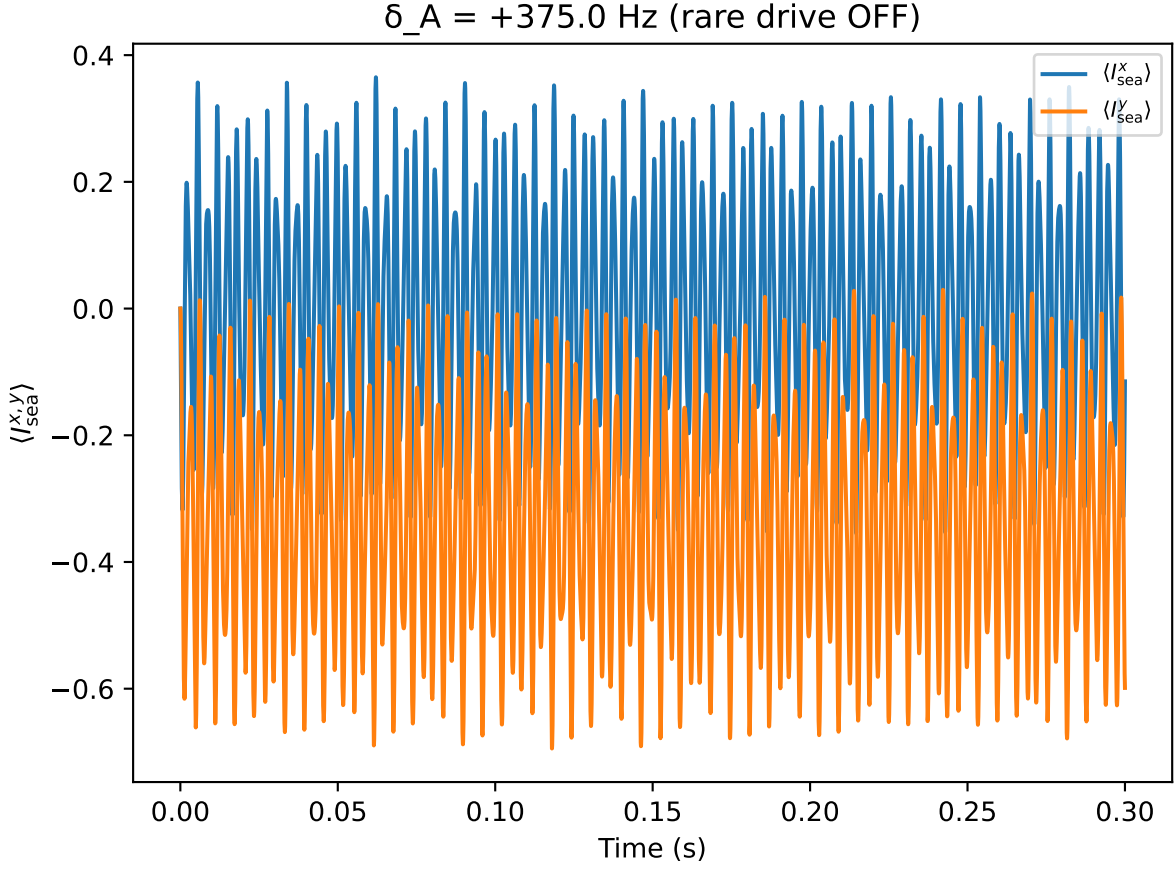

δ_A = +312.5 Hz
−5.825
−5.850
−5.875
−5.900
−5.925
−5.950
−5.975
−6.000
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON

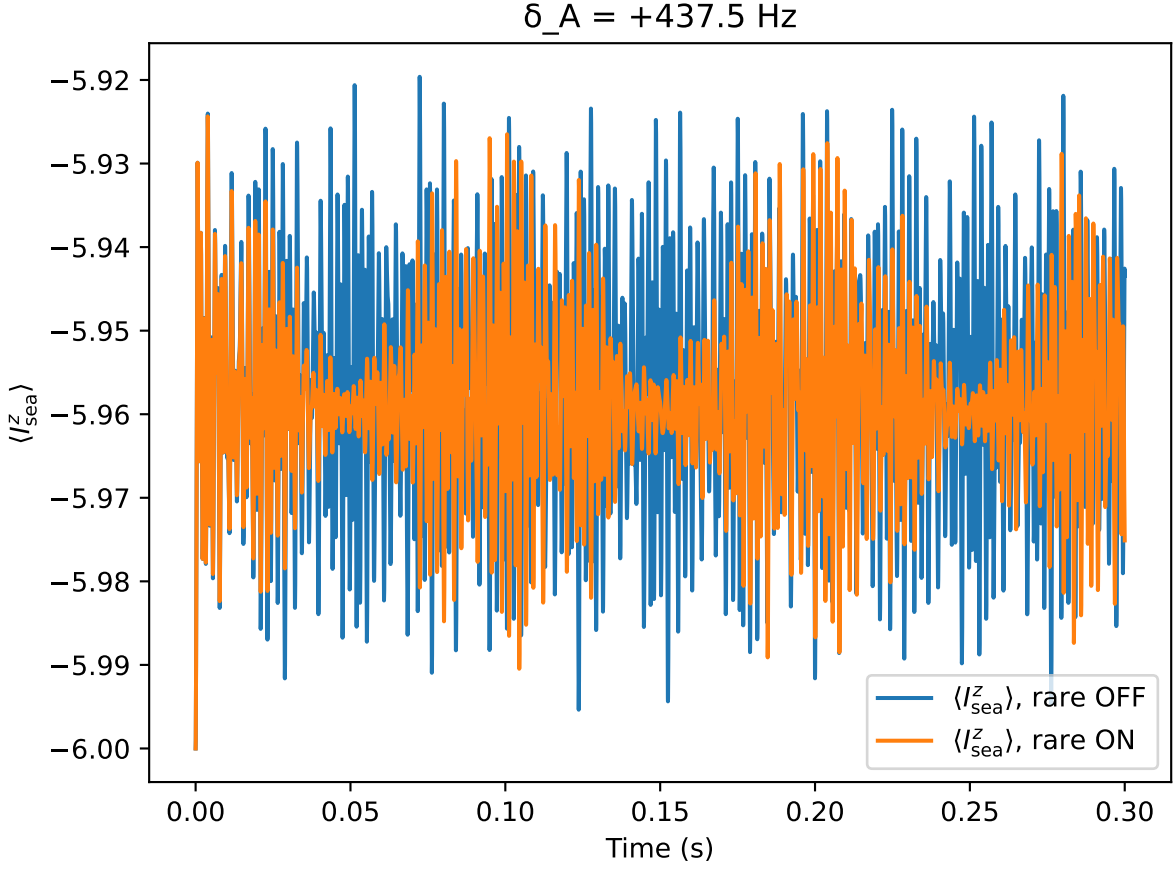

δ_A = +312.5 Hz (pseudo T_1 envelope)
−5.86
−5.88
−5.90
−5.92
−5.94
−5.96
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)

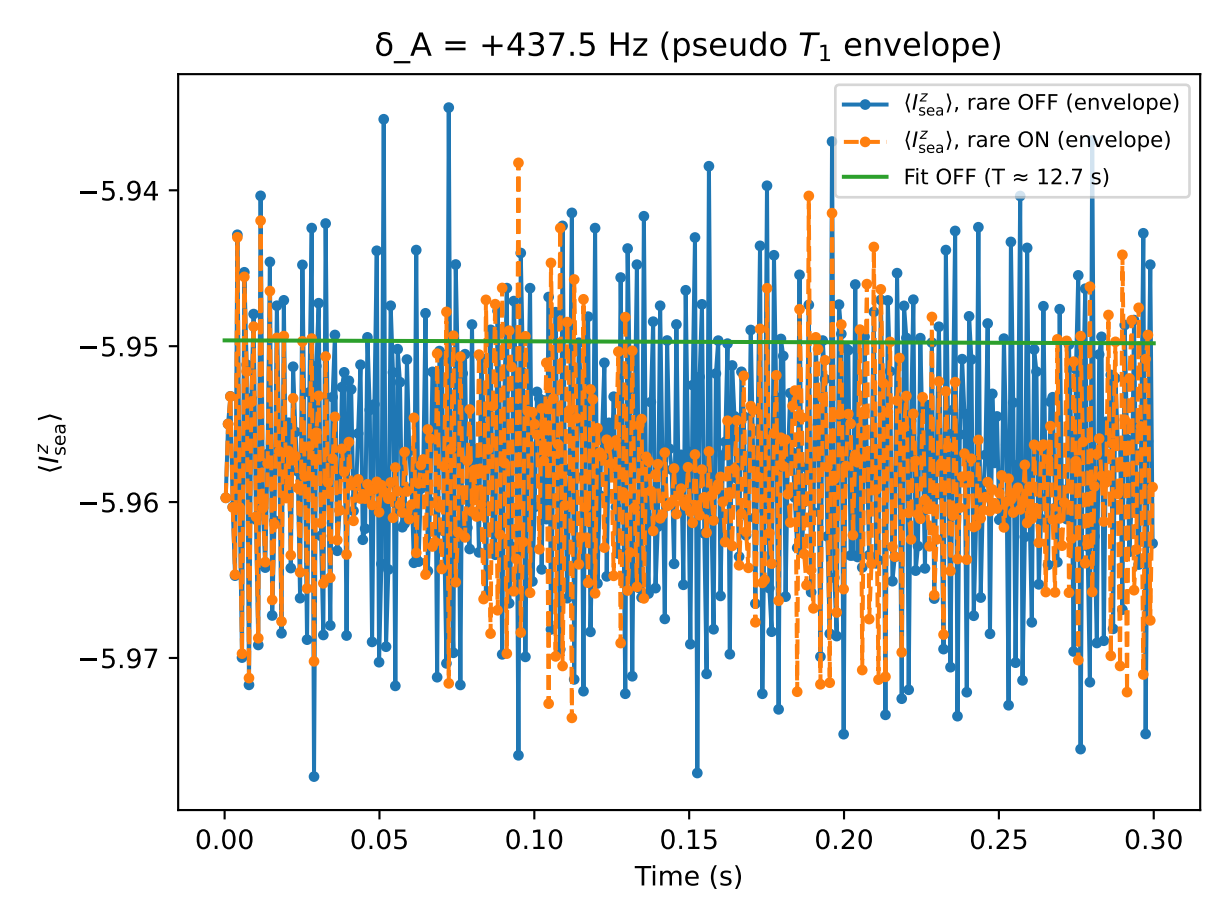

δ_A = +312.5 Hz (rare drive OFF)
⟨I^x_sea⟩
⟨I^y_sea⟩
0.4
0.2
0.0
−0.2
−0.4
−0.6
−0.8
⟨I^{x,y}_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

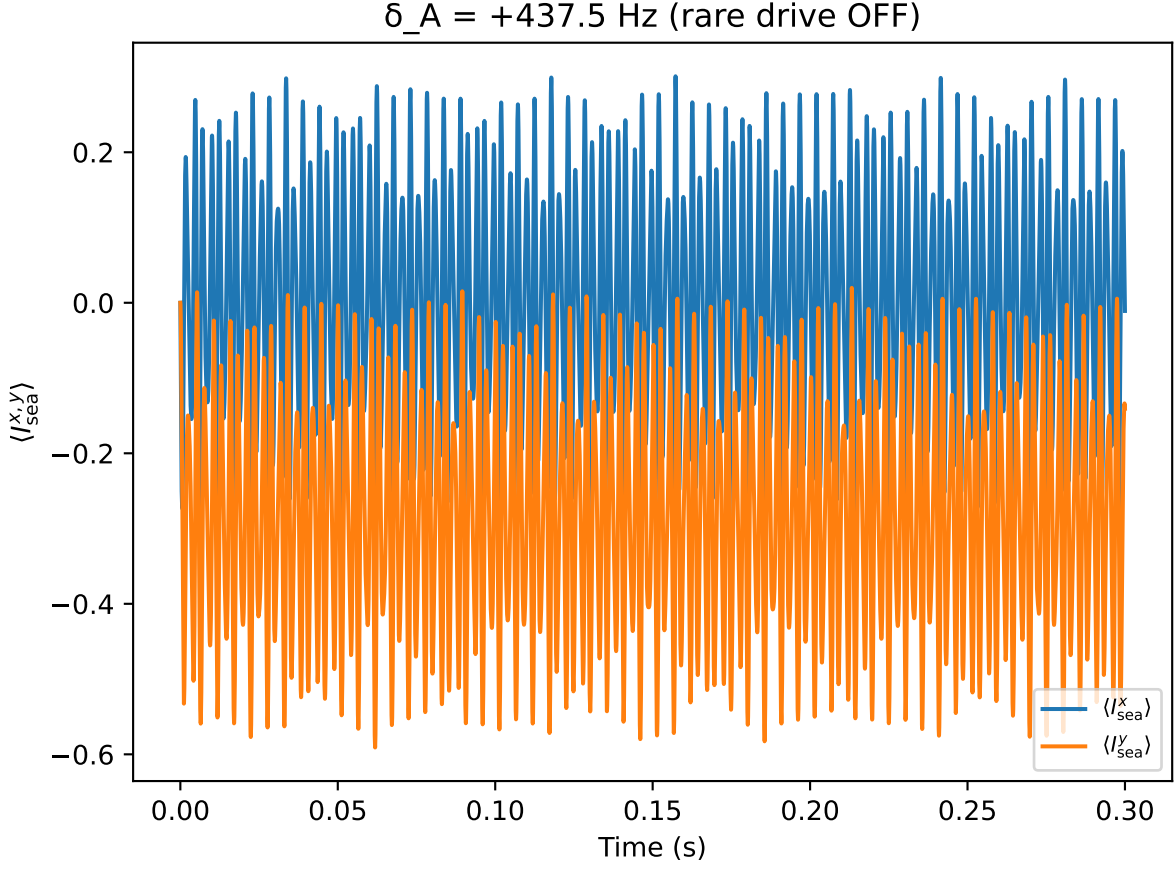

δ_A = +375.0 Hz
−5.90
−5.92
−5.94
−5.96
−5.98
−6.00
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON

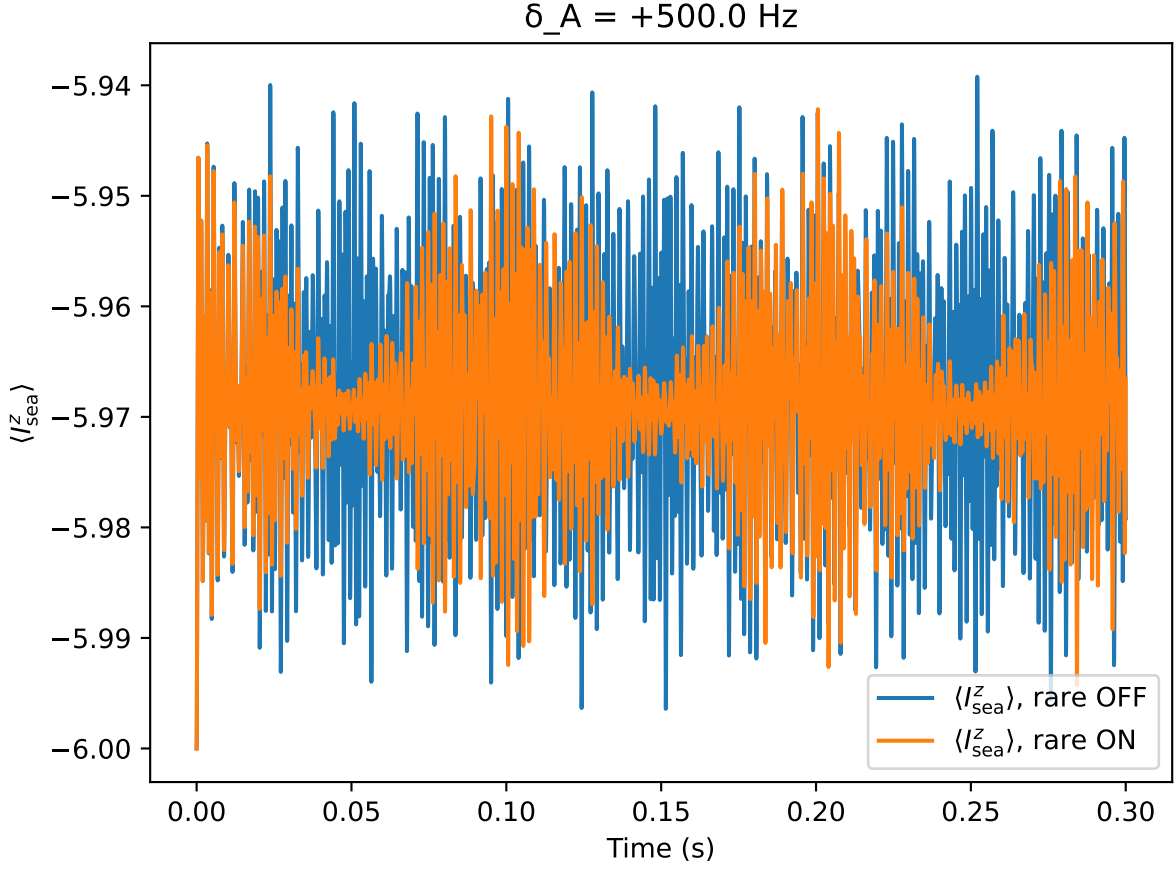

δ_A = +375.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 12.9 s)
−5.90
−5.91
−5.92
−5.93
−5.94
−5.95
−5.96
−5.97
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

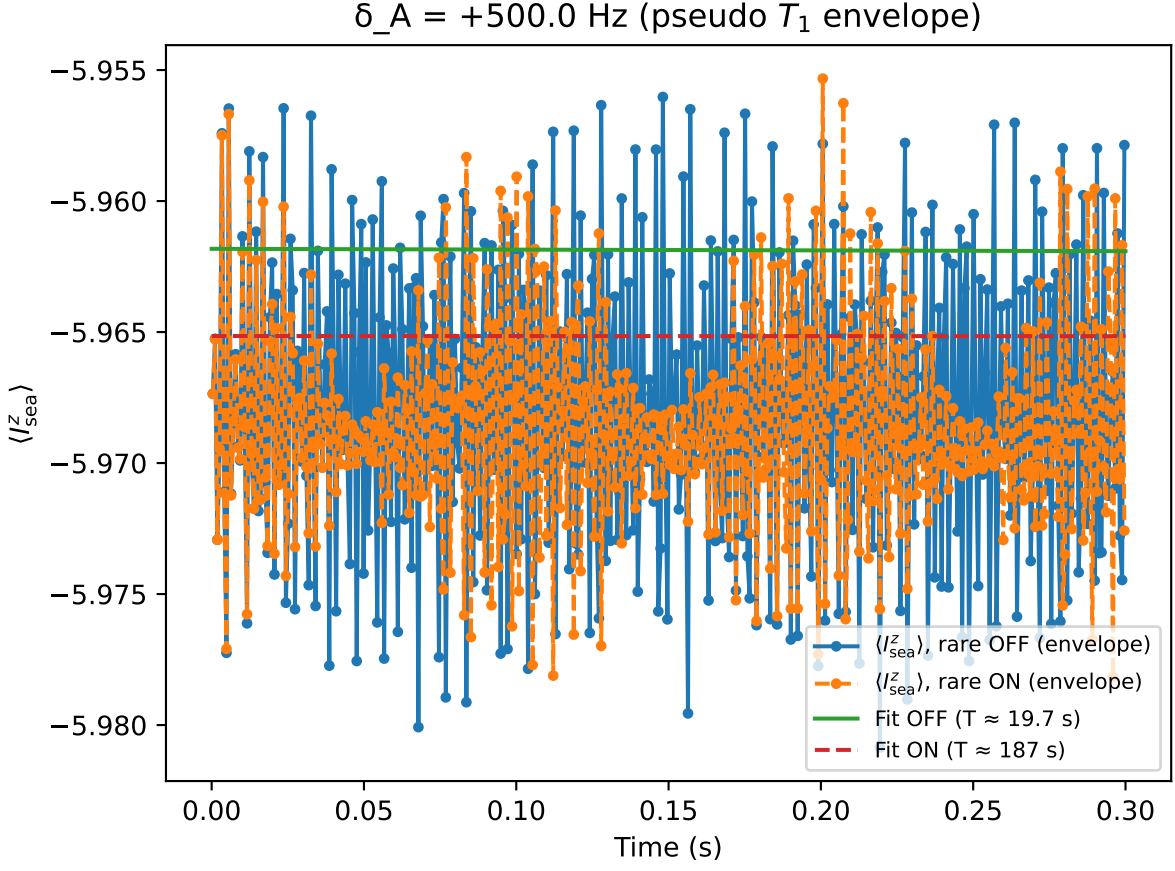

δ_A = +375.0 Hz (rare drive OFF)
$\langle I^x_{\mathrm{sea}} \rangle$
$\langle I^y_{\mathrm{sea}} \rangle$
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
0.4
0.2
0.0
−0.2
−0.4
−0.6
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

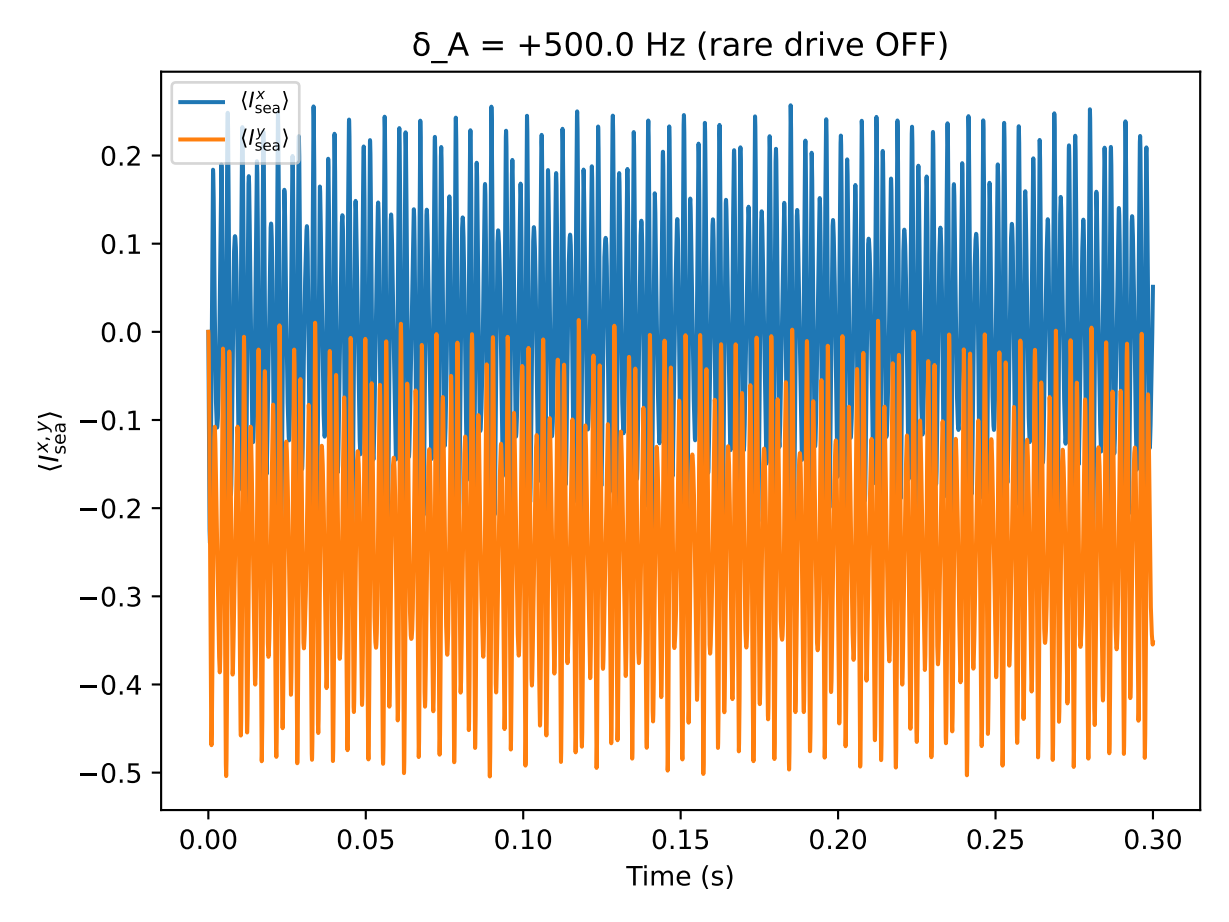

δ_A = +437.5 Hz
−5.92
−5.93
−5.94
−5.95
−5.96
−5.97
−5.98
−5.99
−6.00
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON


δ_A = +437.5 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 12.7 s)
−5.94
−5.95
−5.96
−5.97
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)


δ_A = +437.5 Hz (rare drive OFF)
0.2
0.0
−0.2
−0.4
−0.6
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$


δ_A = +500.0 Hz
−5.94
−5.95
−5.96
−5.97
−5.98
−5.99
−6.00
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON


δ_A = +500.0 Hz (pseudo T_1 envelope)
−5.955
−5.960
−5.965
−5.970
−5.975
−5.980
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 19.7 s)
Fit ON (T ≈ 187 s)


δ_A = +500.0 Hz (rare drive OFF)
⟨I^x_sea⟩
⟨I^y_sea⟩
⟨I^{x,y}_sea⟩
0.2
0.1
0.0
−0.1
−0.2
−0.3
−0.4
−0.5
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

T-like decay fits from ⟨I^z_sea⟩ traces

delta_Hz	T_Iz_sea_off	T_Iz_sea_on
+0.0	NA	NA
+62.5	0.545	1.99
+125.0	3.84	45.8
+187.5	10.7	NA
+250.0	NA	NA
+312.5	NA	NA
+375.0	12.9	NA
+437.5	12.7	NA
+500.0	19.7	187