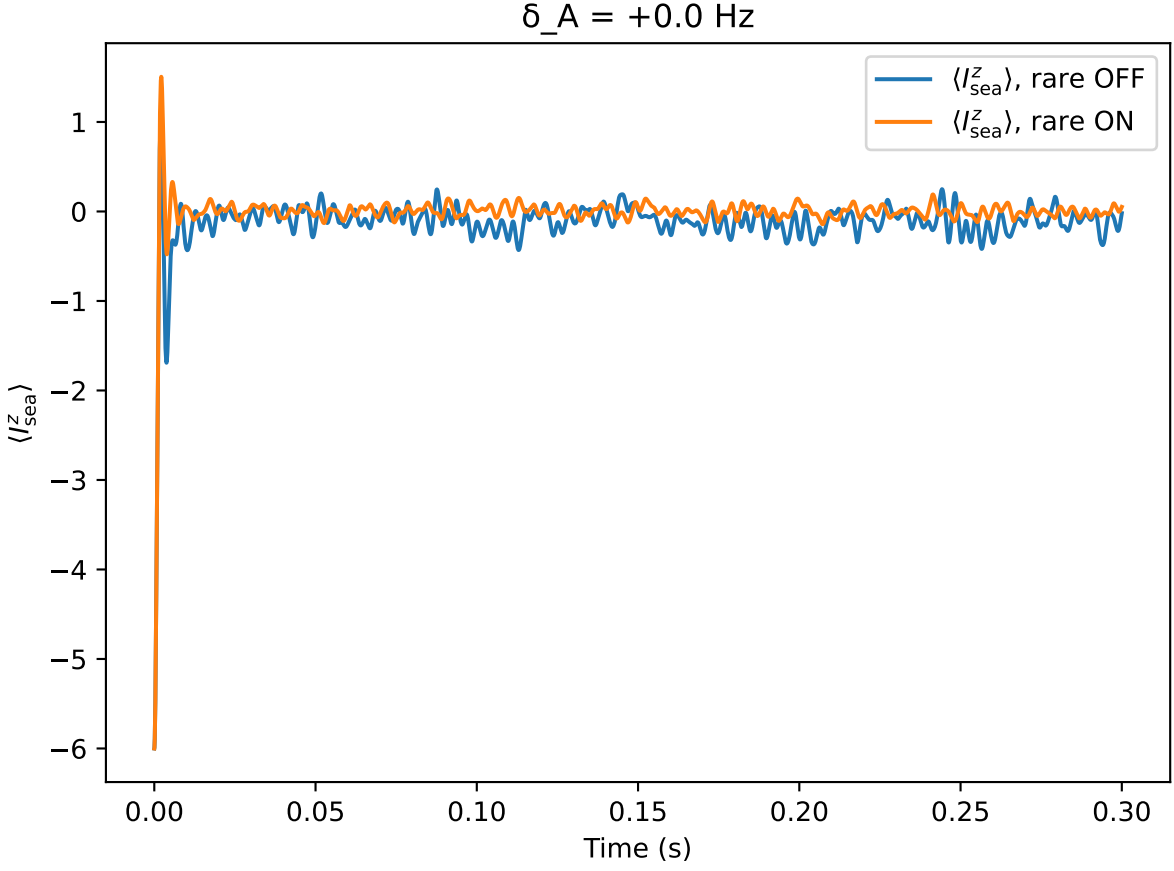
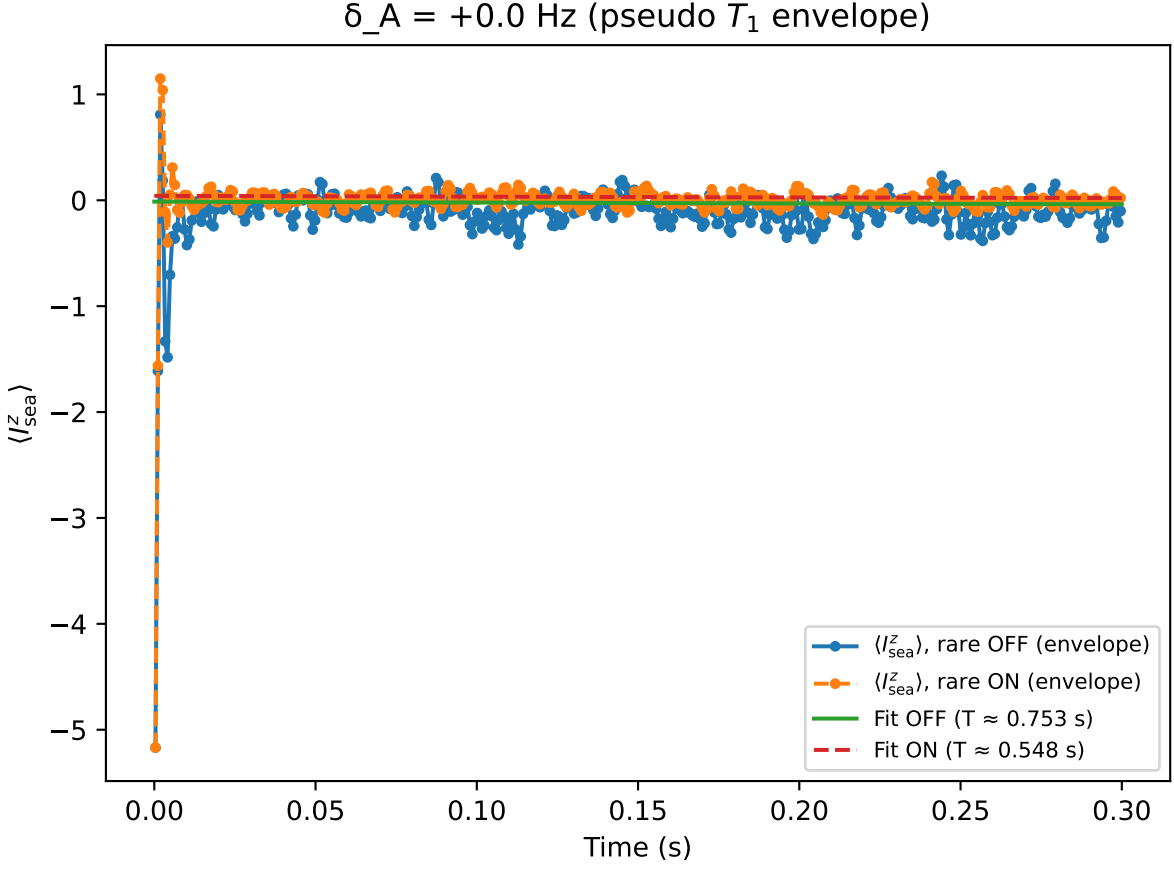
Sea detuning sweep report (Ga sea / Al rare)

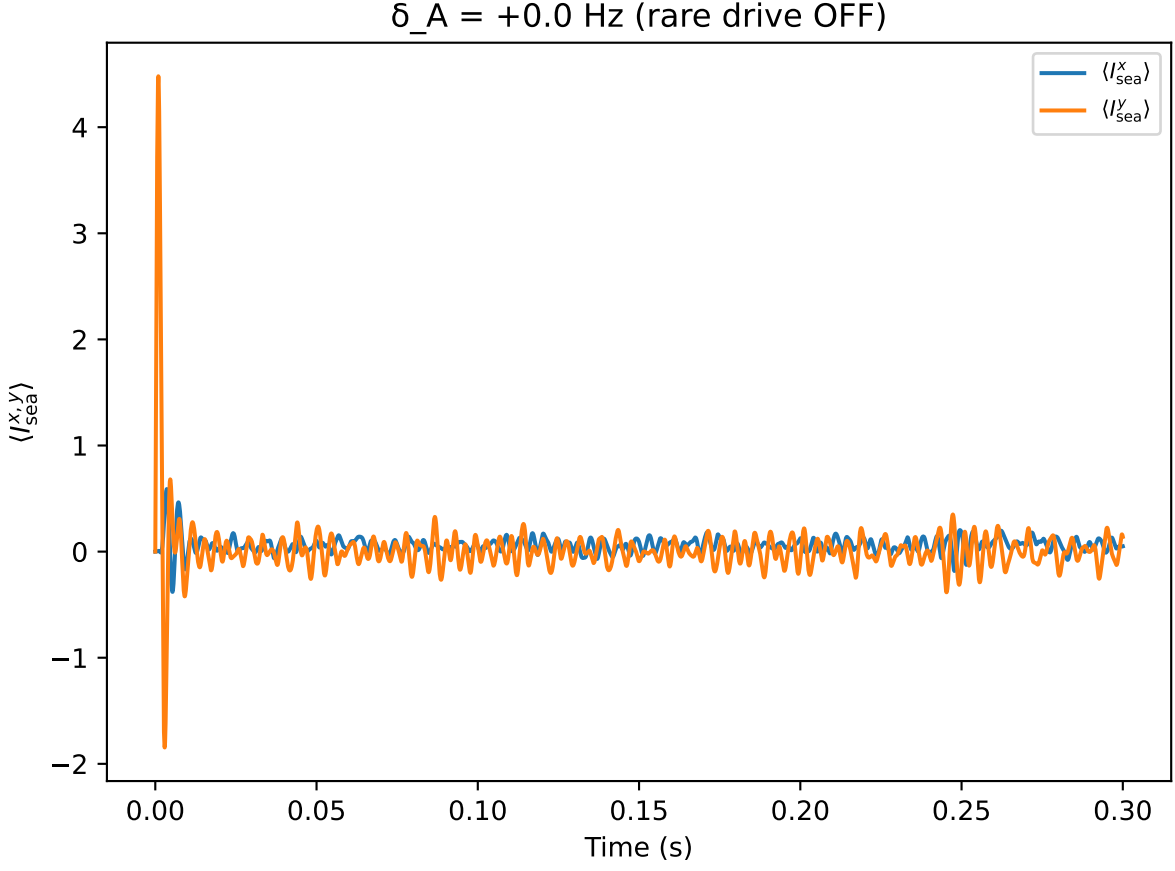
Global parameters (constant across sweep):

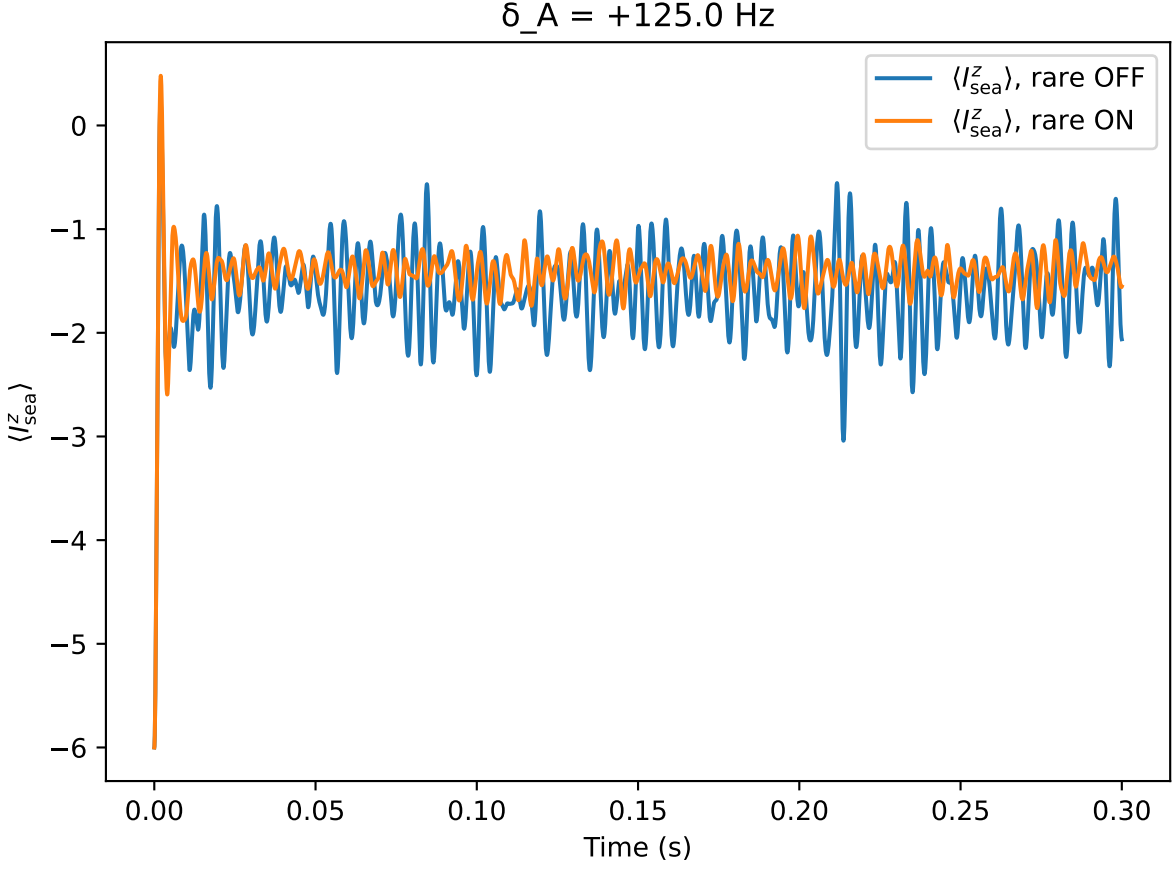
f_Az (sea Larmor)	= 34.062 MHz
f_Rz (rare Larmor)	= 33.308 MHz
f1A (sea Rabi)	= 0.200 kHz
f1R (rare Rabi)	= 0.100 kHz
gamma_sea	= 7.134e+07 rad·s⁻¹·T⁻¹
gamma_rare	= 6.976e+07 rad·s⁻¹·T⁻¹
B0_common	= 3.000 T
B1_sea	= 1.761e-05 T
B1_rare	= 9.007e-06 T
dipolar_scale_SI	= 1.055e-41
shell_scale	= 0.300 nm
t_final	= 3.000e-01 s
steps	= 20000
n_sea	= 12
phi_sea	= 0.000 rad
phi_rare	= 0.000 rad

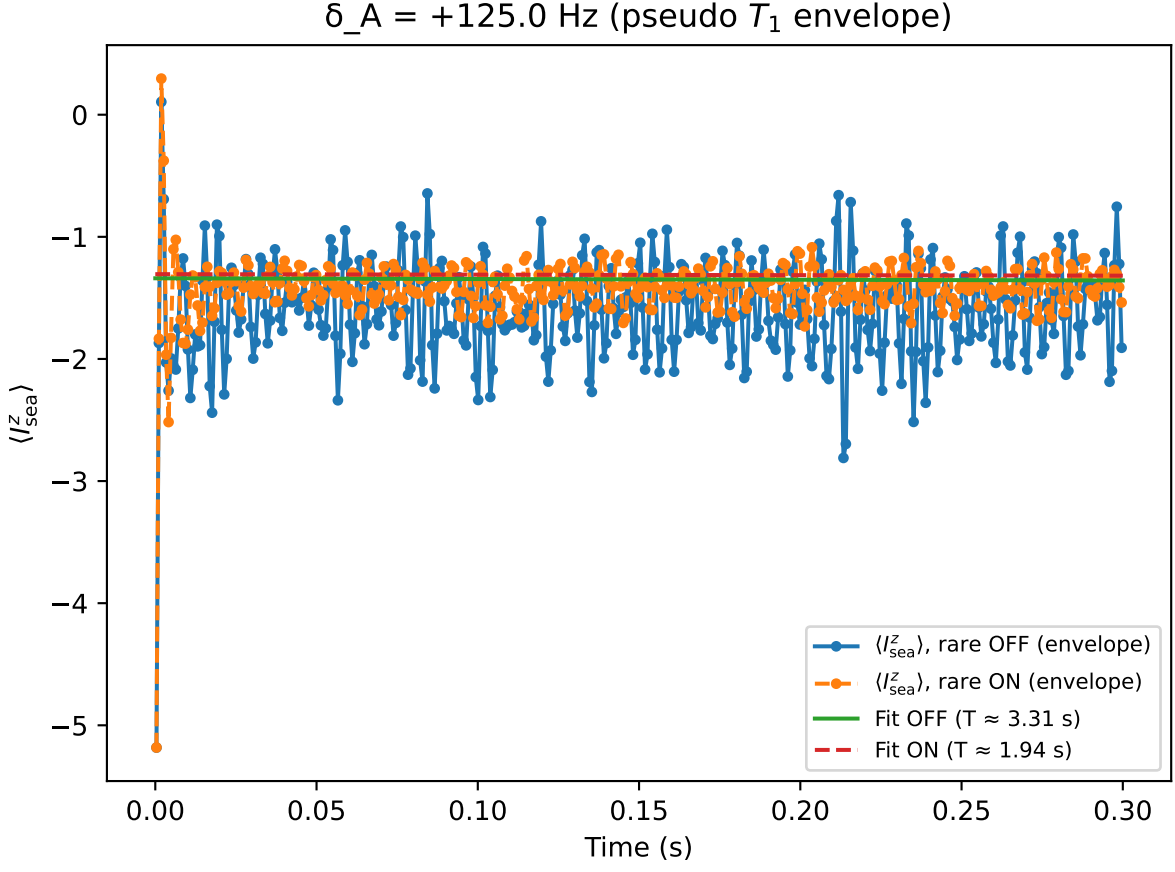
Sea detunings (δ_A = f_Az - f_rf,A) in Hz:
  +0.0, +125.0, +250.0, +375.0, +500.0, +625.0, +750.0, +875.0, +1000.0

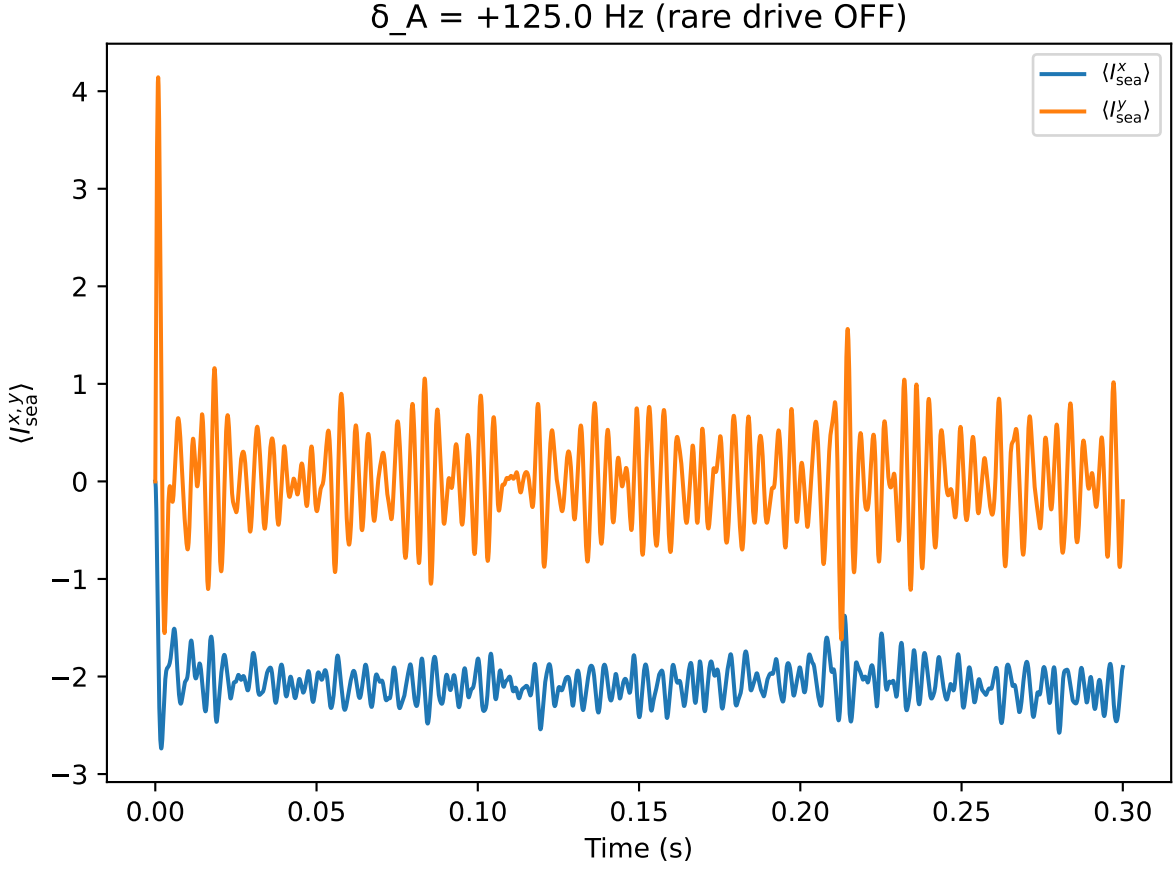

δ_A = +0.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
Time (s)
1
0
−1
−2
−3
−4
−5
−6
0.00
0.05
0.10
0.15
0.20
0.25
0.30

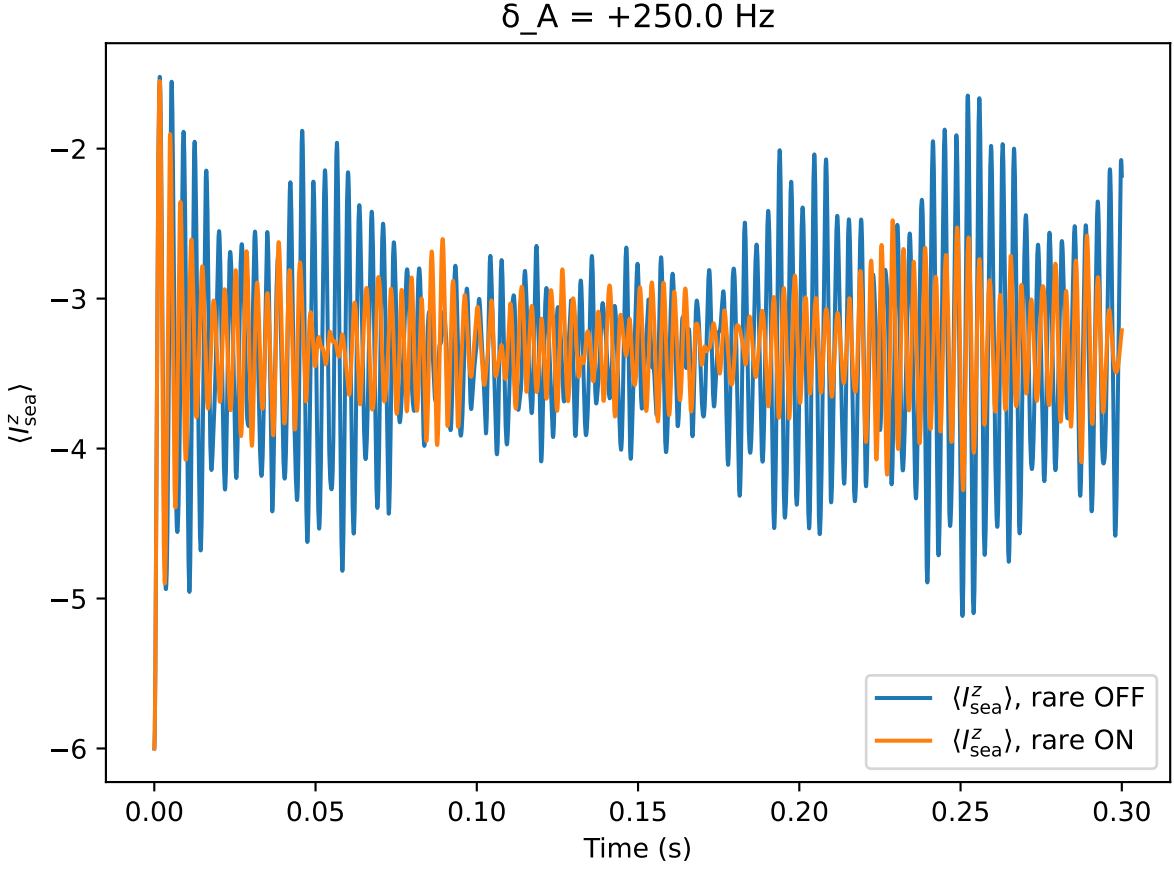

δ_A = +0.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
Time (s)
1
0
−1
−2
−3
−4
−5
0.00
0.05
0.10
0.15
0.20
0.25
0.30
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.753 s)
Fit ON (T ≈ 0.548 s)

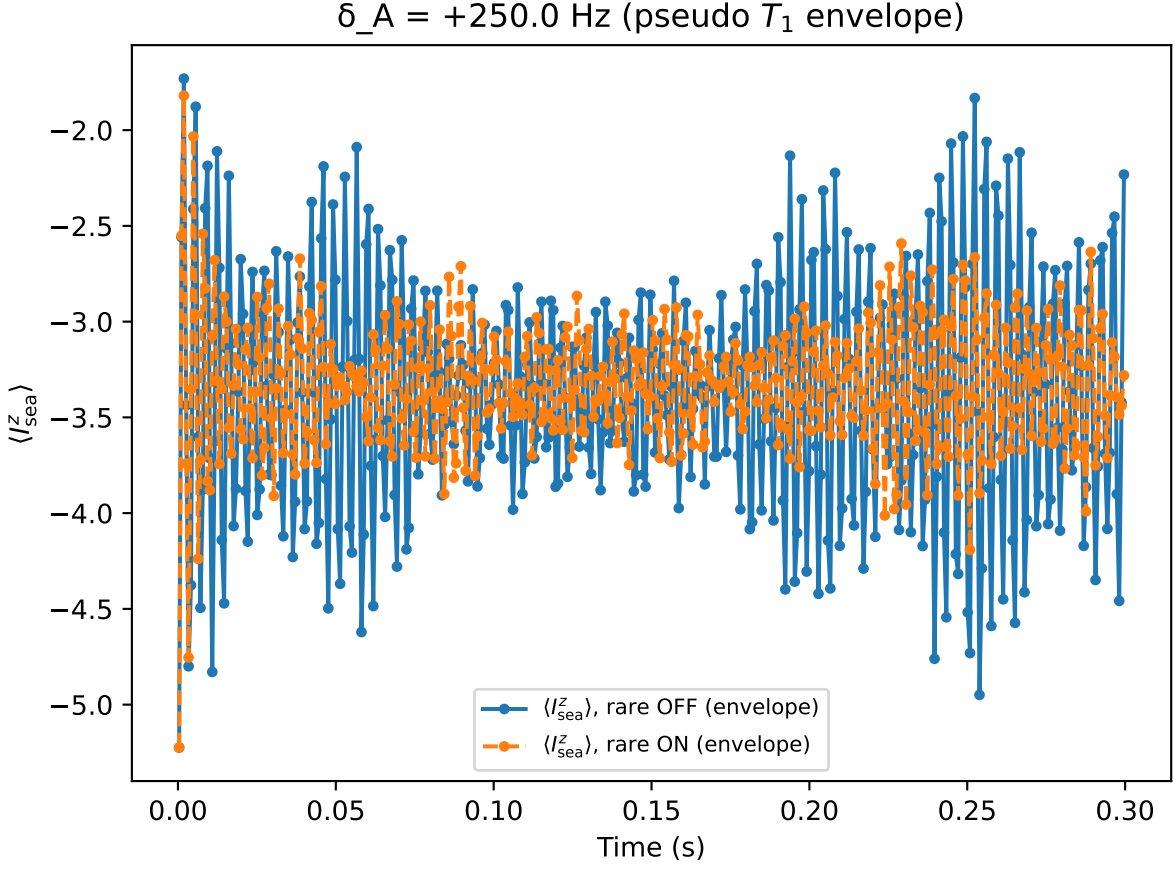

δ_A = +0.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
4
3
2
1
0
−1
−2
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

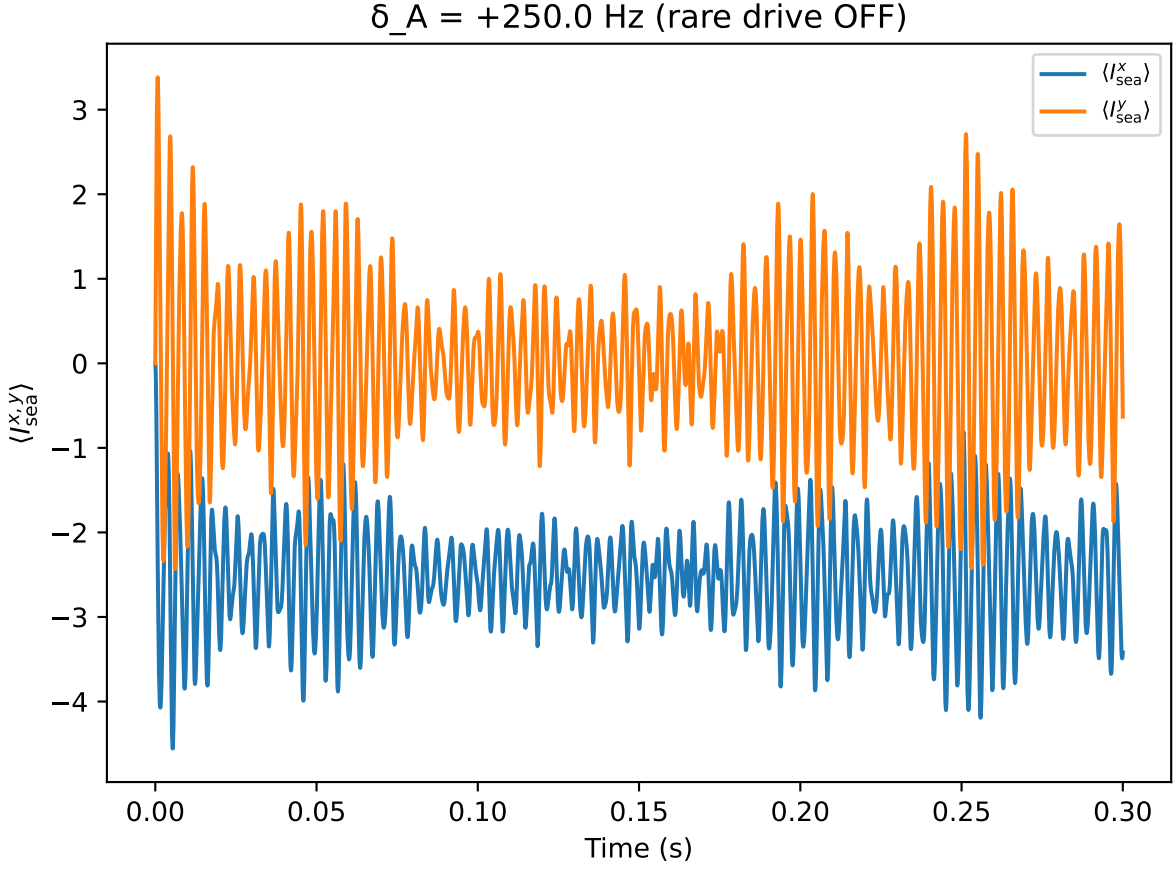

δ_A = +125.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
0
−1
−2
−3
−4
−5
−6
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

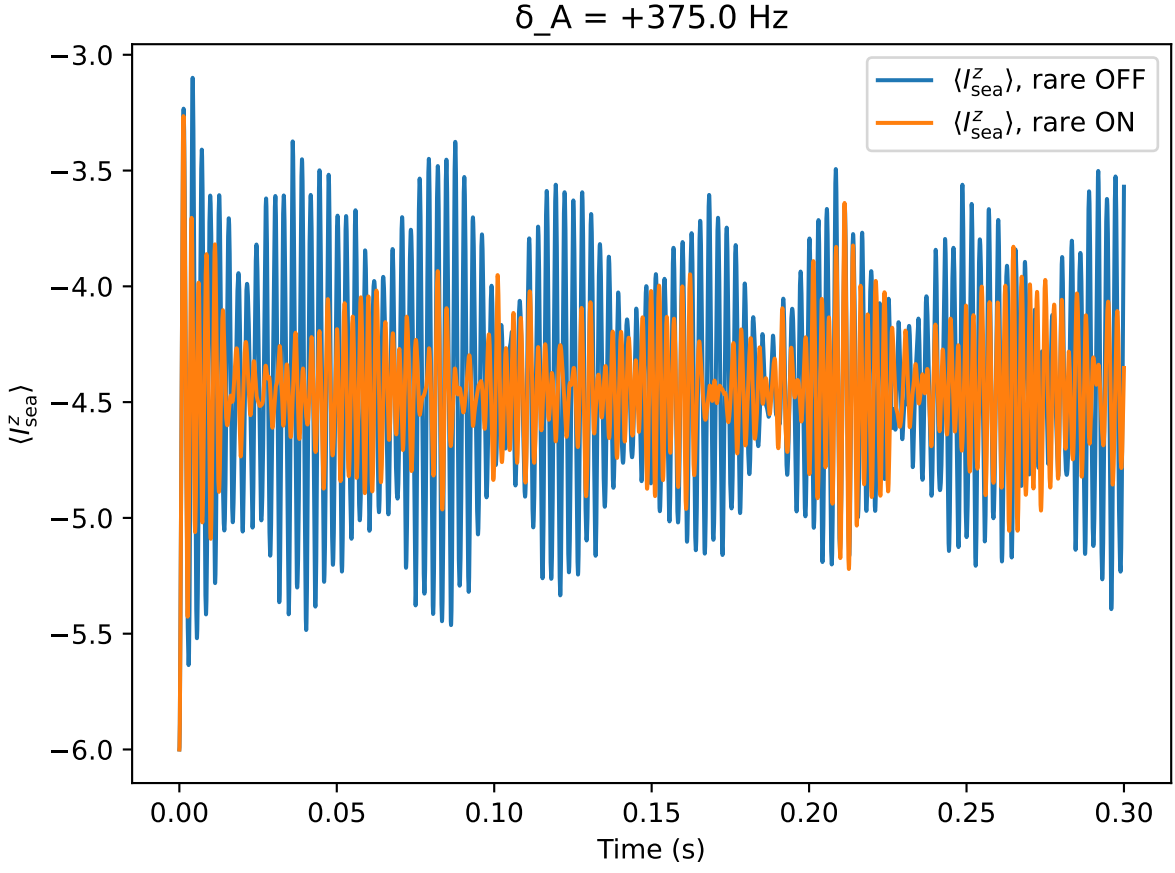

δ_A = +125.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
Time (s)
0
−1
−2
−3
−4
−5
0.00
0.05
0.10
0.15
0.20
0.25
0.30
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 3.31 s)
Fit ON (T ≈ 1.94 s)

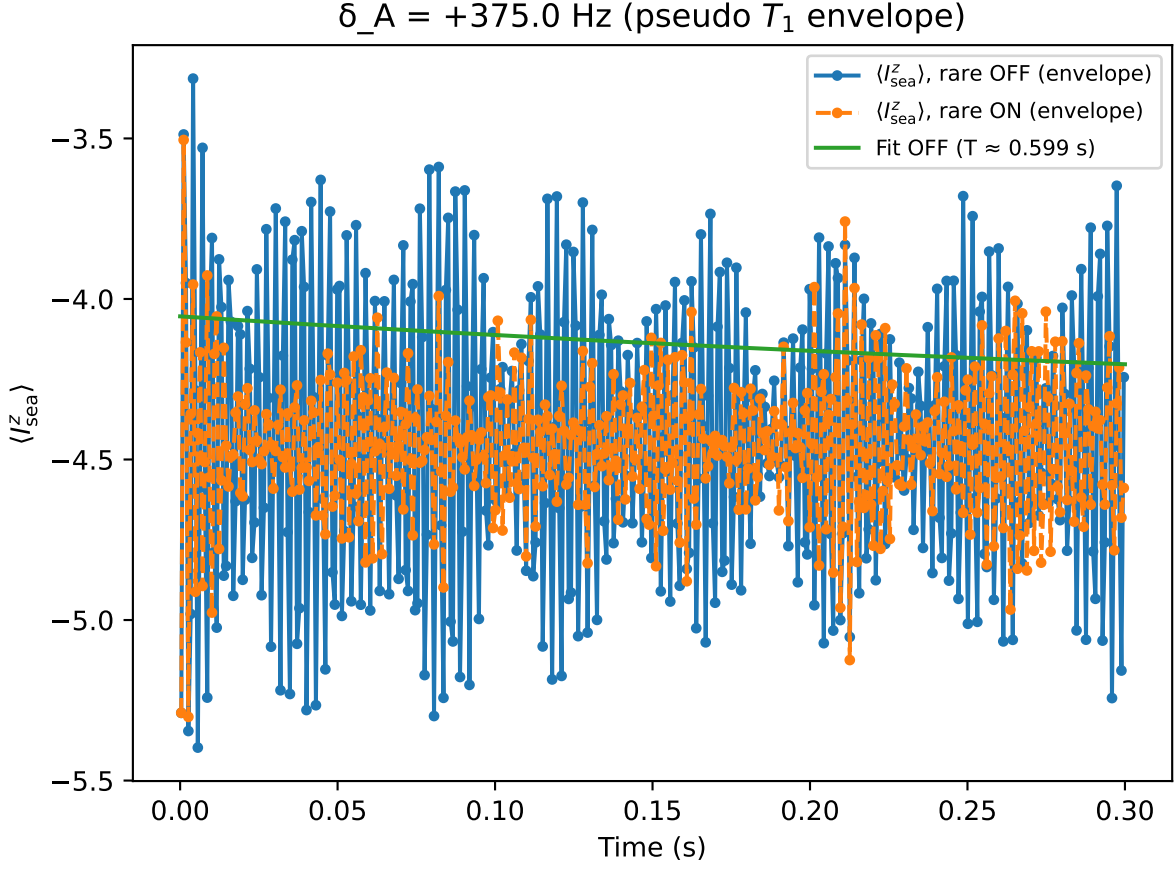

δ_A = +125.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
4
3
2
1
0
−1
−2
−3
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

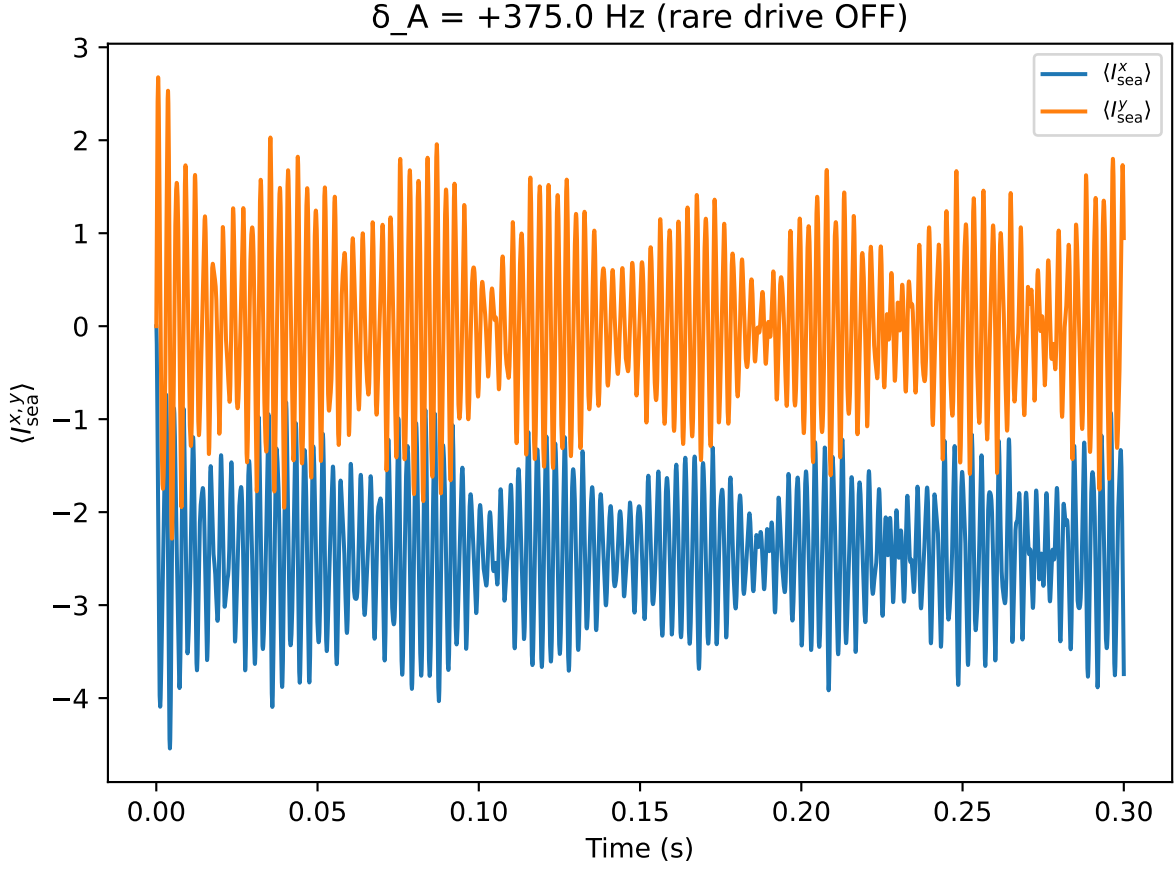

δ_A = +250.0 Hz
−2
−3
−4
−5
−6
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF
$\langle I^z_{sea} \rangle$, rare ON

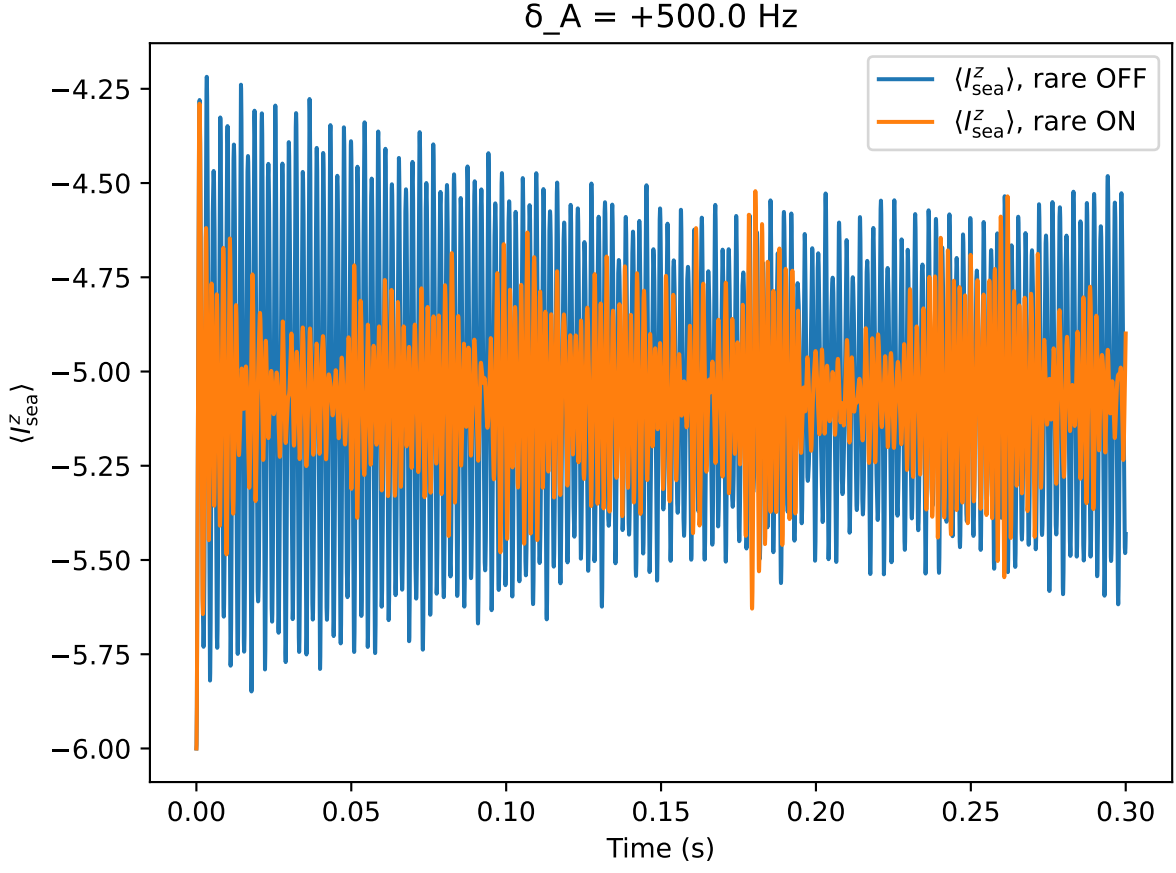

δ_A = +250.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
−2.0
−2.5
−3.0
−3.5
−4.0
−4.5
−5.0
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)

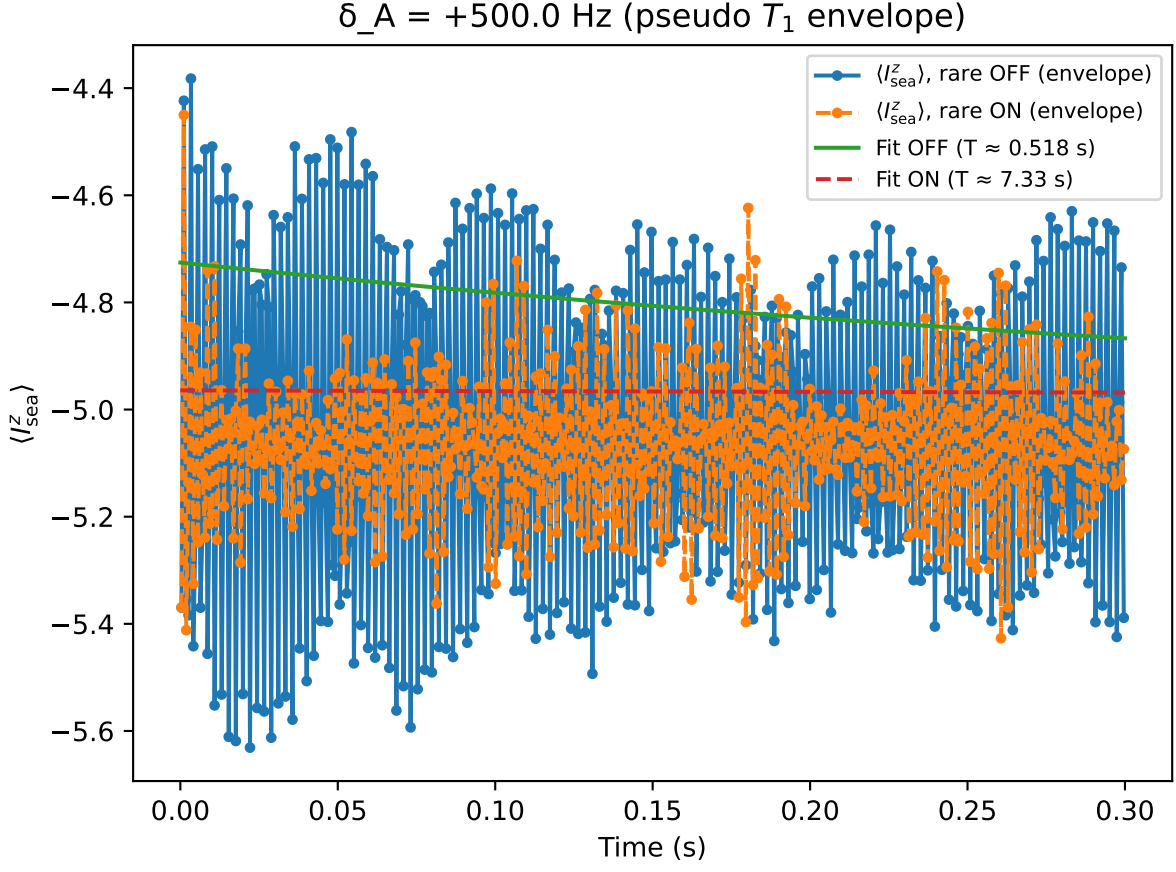

δ_A = +250.0 Hz (rare drive OFF)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
3
2
1
0
−1
−2
−3
−4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

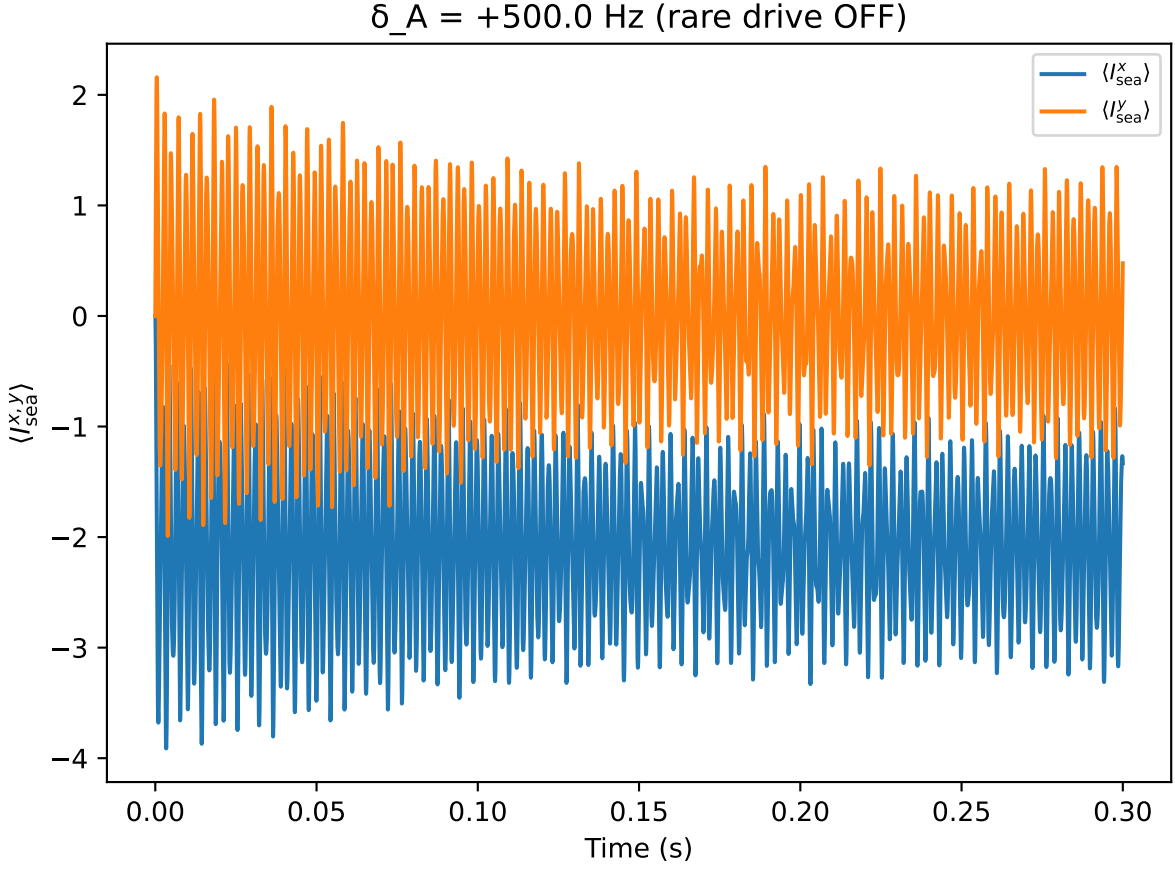

δ_A = +375.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
−3.0
−3.5
−4.0
−4.5
−5.0
−5.5
−6.0
⟨I^z_{sea}⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

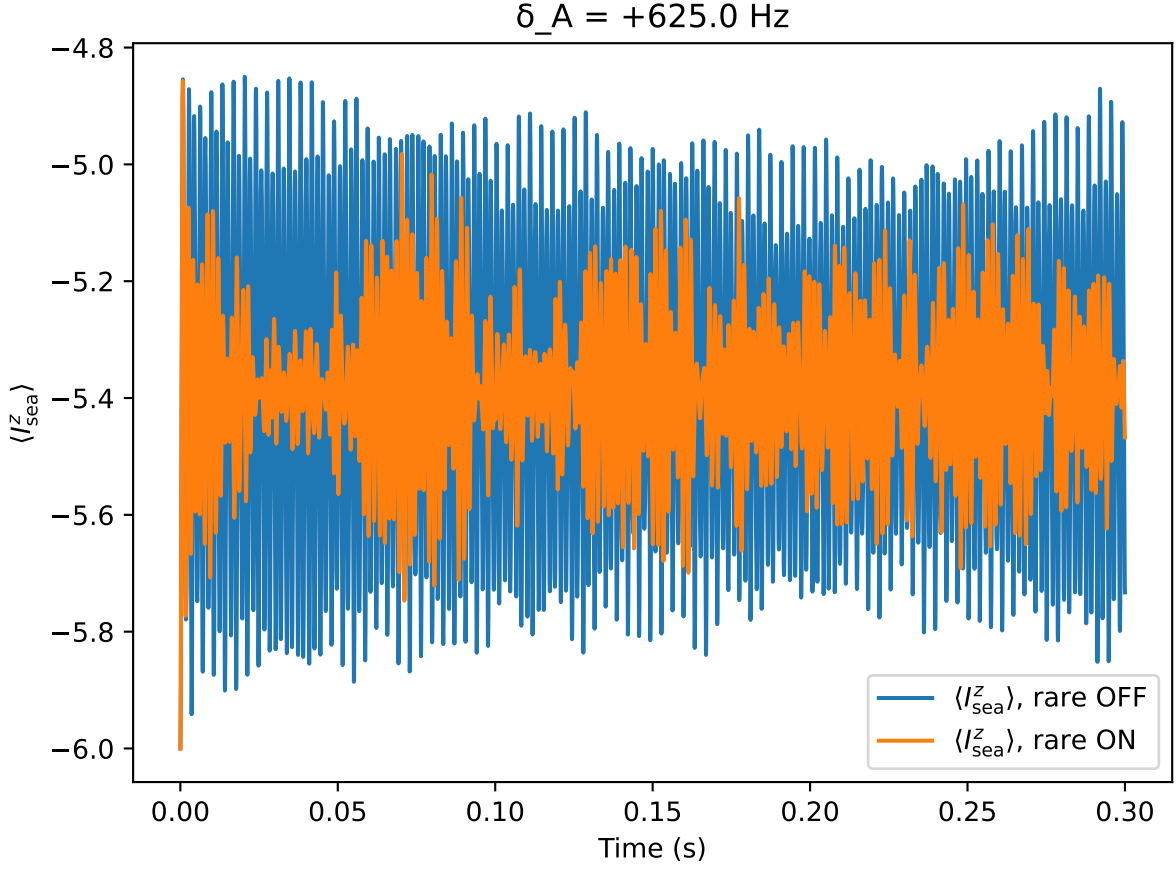

δ_A = +375.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.599 s)
$\langle I^z_{sea} \rangle$
−3.5
−4.0
−4.5
−5.0
−5.5
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

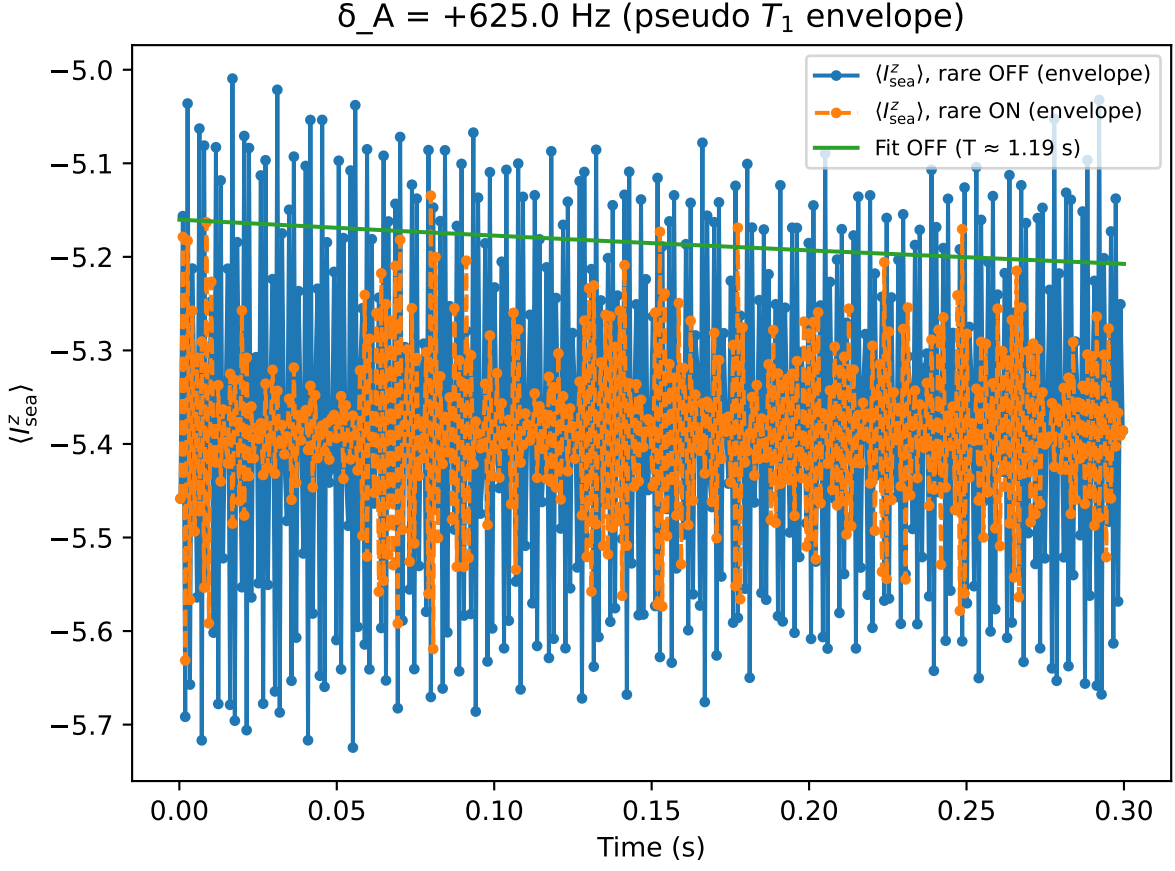

δ_A = +375.0 Hz (rare drive OFF)
$\langle I^{x}_{sea} \rangle$
$\langle I^{y}_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
3
2
1
0
−1
−2
−3
−4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

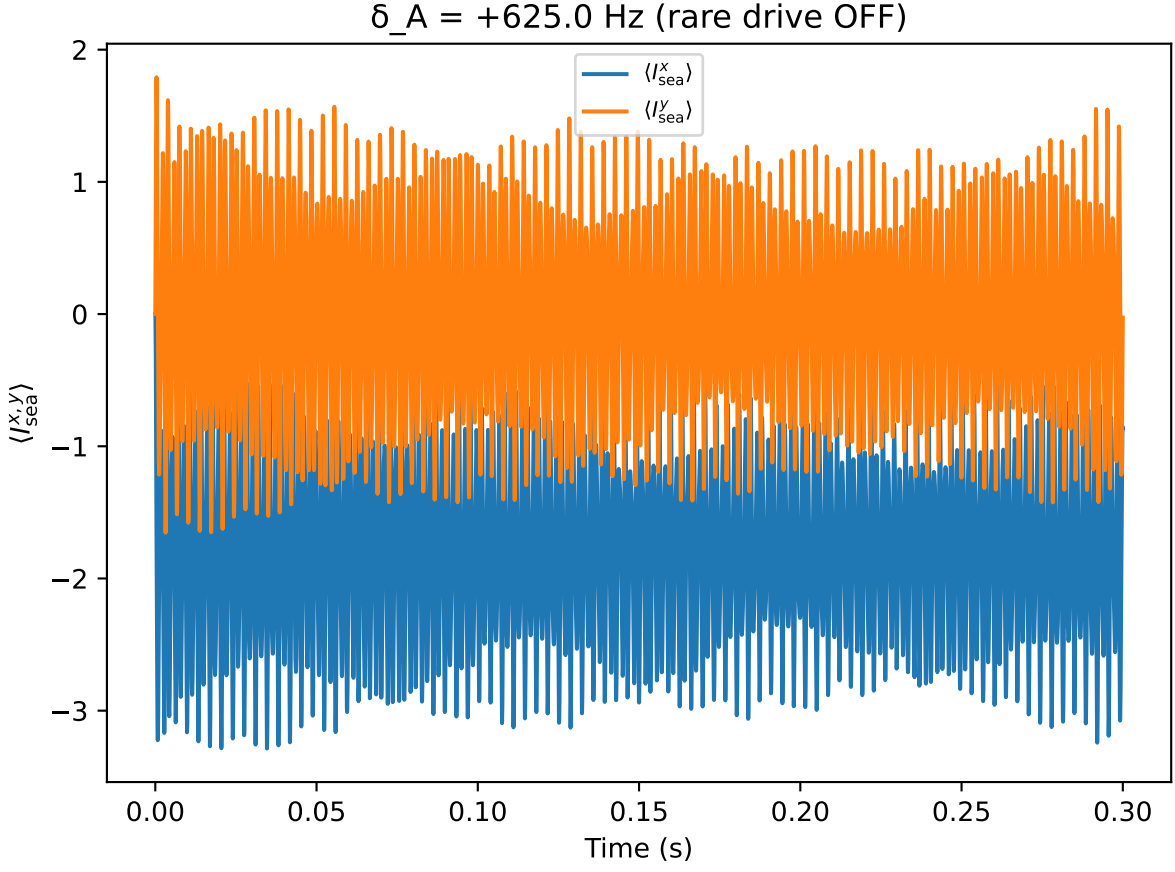

δ_A = +500.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
−4.25
−4.50
−4.75
−5.00
−5.25
−5.50
−5.75
−6.00
⟨I^z_{sea}⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

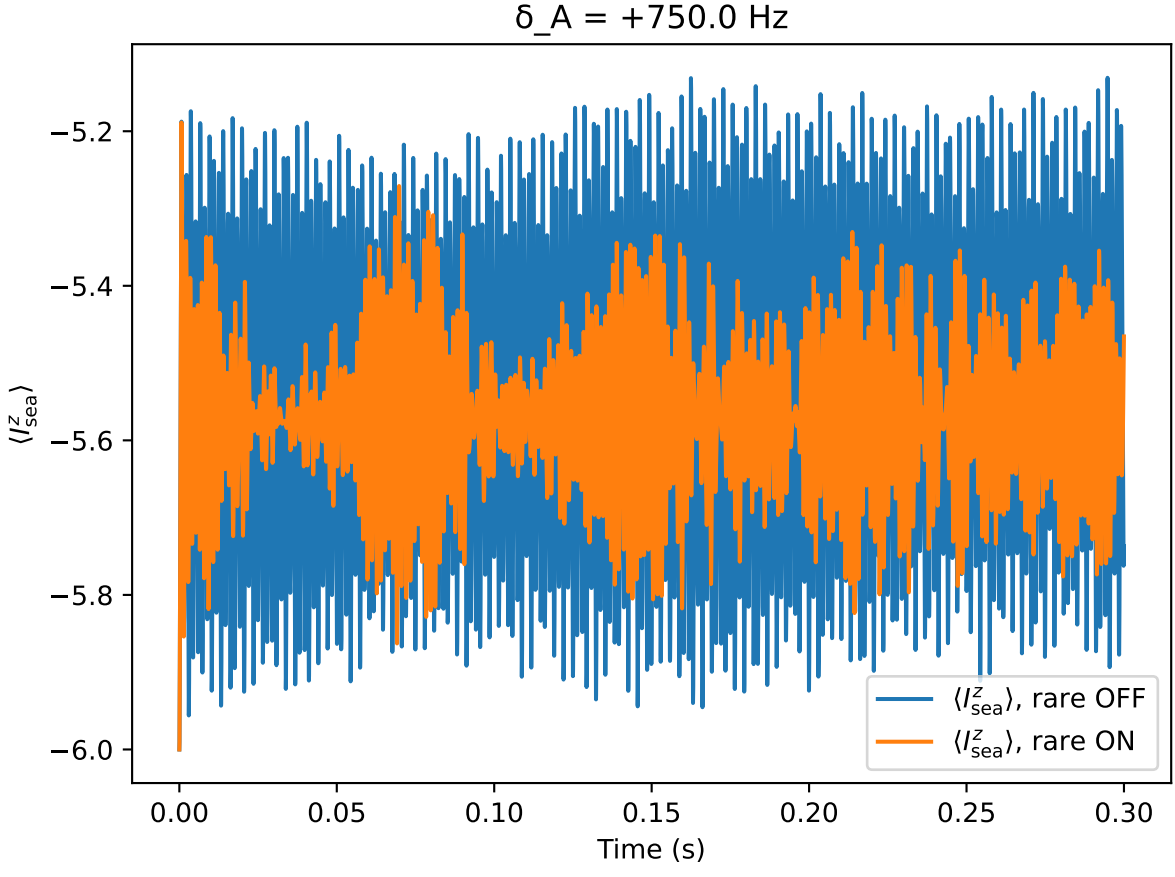

δ_A = +500.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.518 s)
Fit ON (T ≈ 7.33 s)
$\langle I^z_{sea} \rangle$
−4.4
−4.6
−4.8
−5.0
−5.2
−5.4
−5.6
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

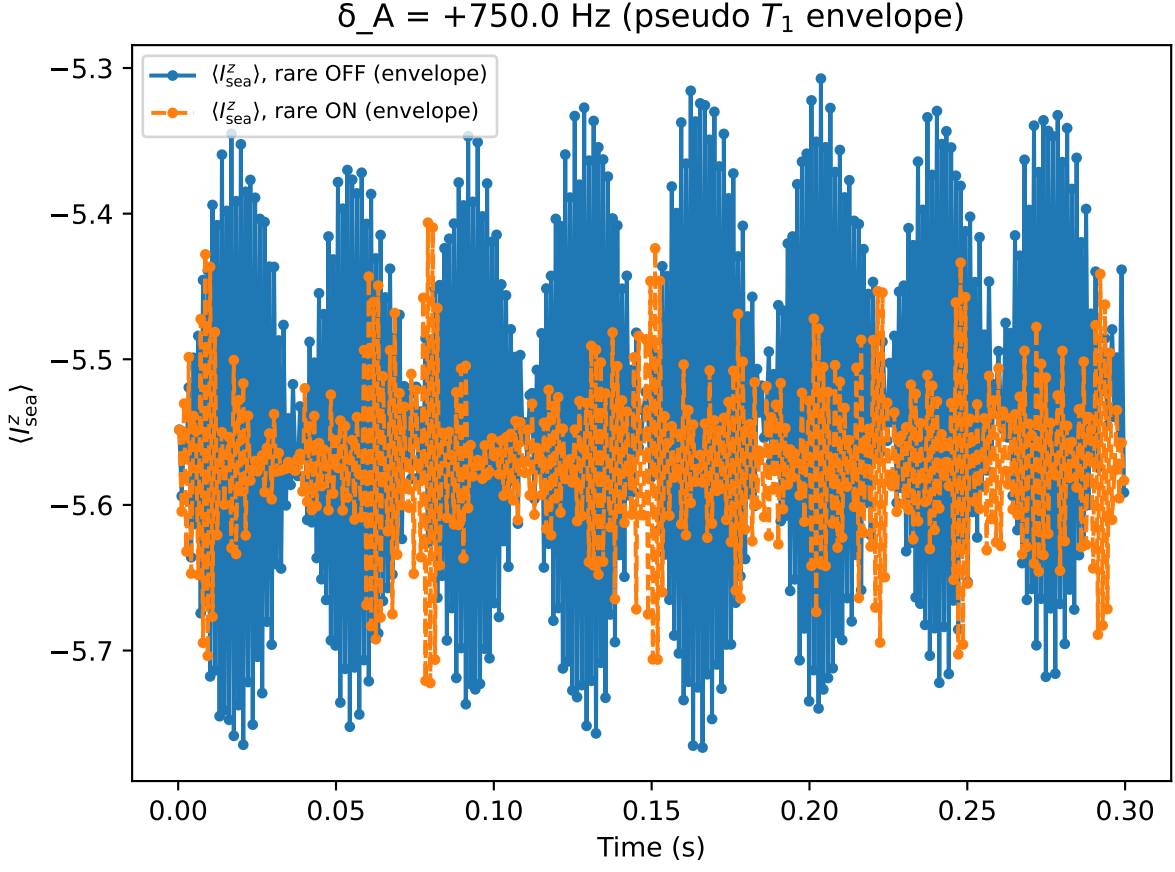

δ_A = +500.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
2
1
0
−1
−2
−3
−4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

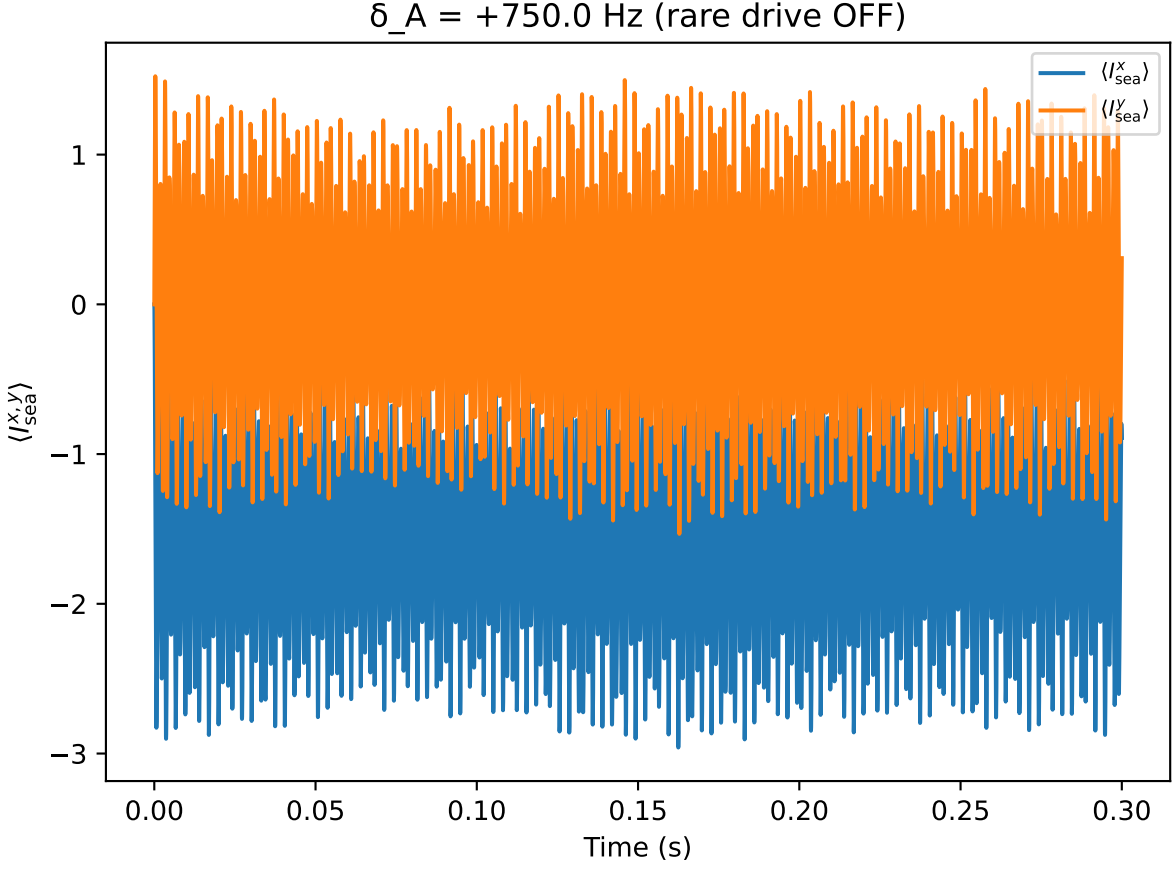

δ_A = +625.0 Hz
−4.8
−5.0
−5.2
−5.4
−5.6
−5.8
−6.0
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON

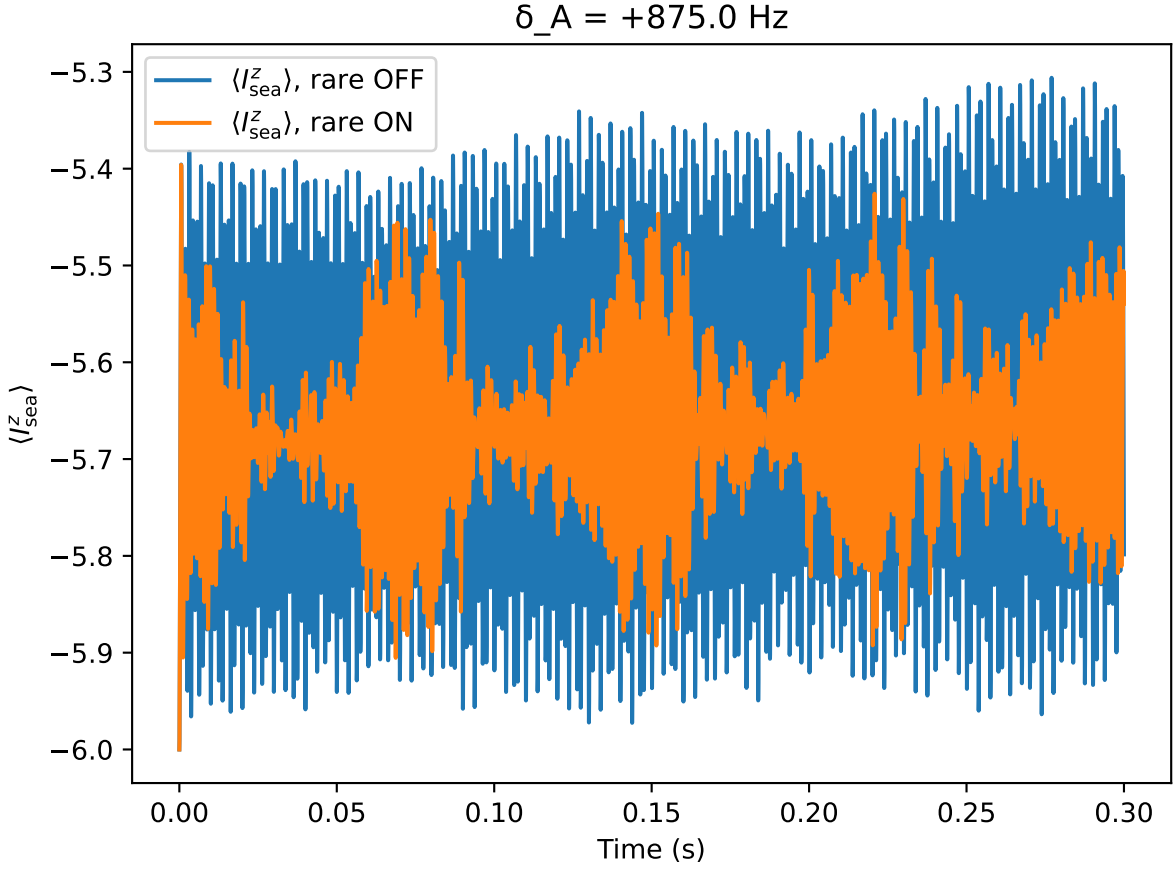

δ_A = +625.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 1.19 s)
$\langle I^z_{sea} \rangle$
−5.0
−5.1
−5.2
−5.3
−5.4
−5.5
−5.6
−5.7
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

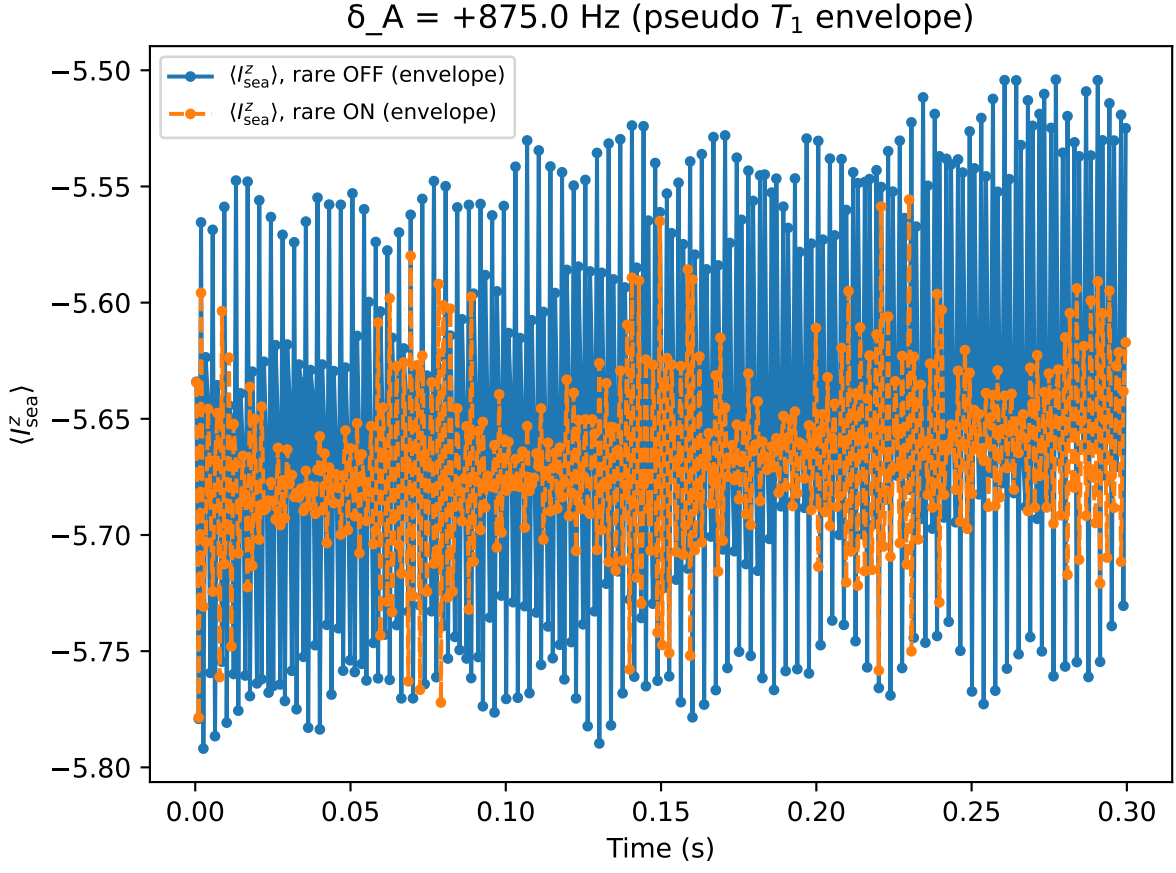

δ_A = +625.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
2
1
0
−1
−2
−3
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

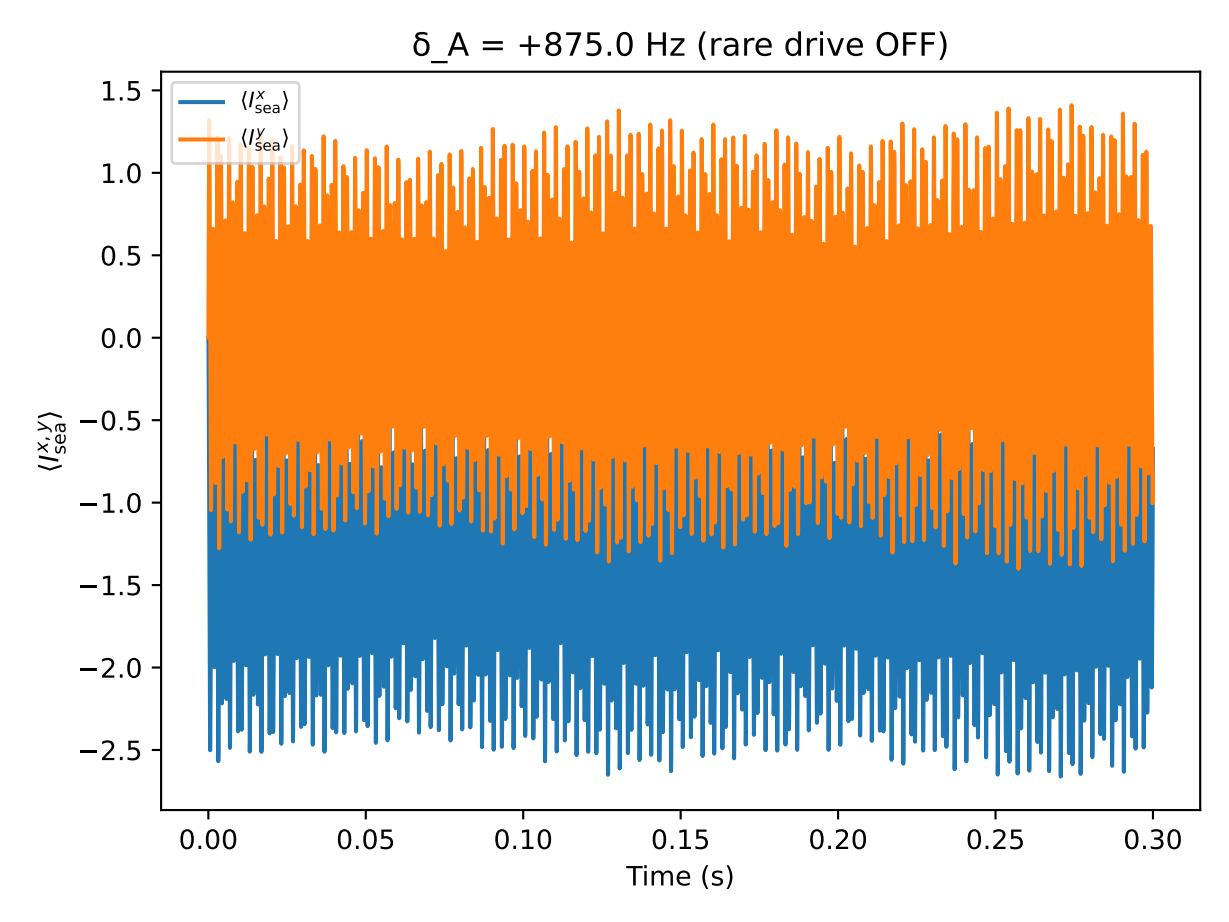

δ_A = +750.0 Hz
−5.2
−5.4
−5.6
−5.8
−6.0
⟨I^z_sea⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)
⟨I^z_sea⟩, rare OFF
⟨I^z_sea⟩, rare ON

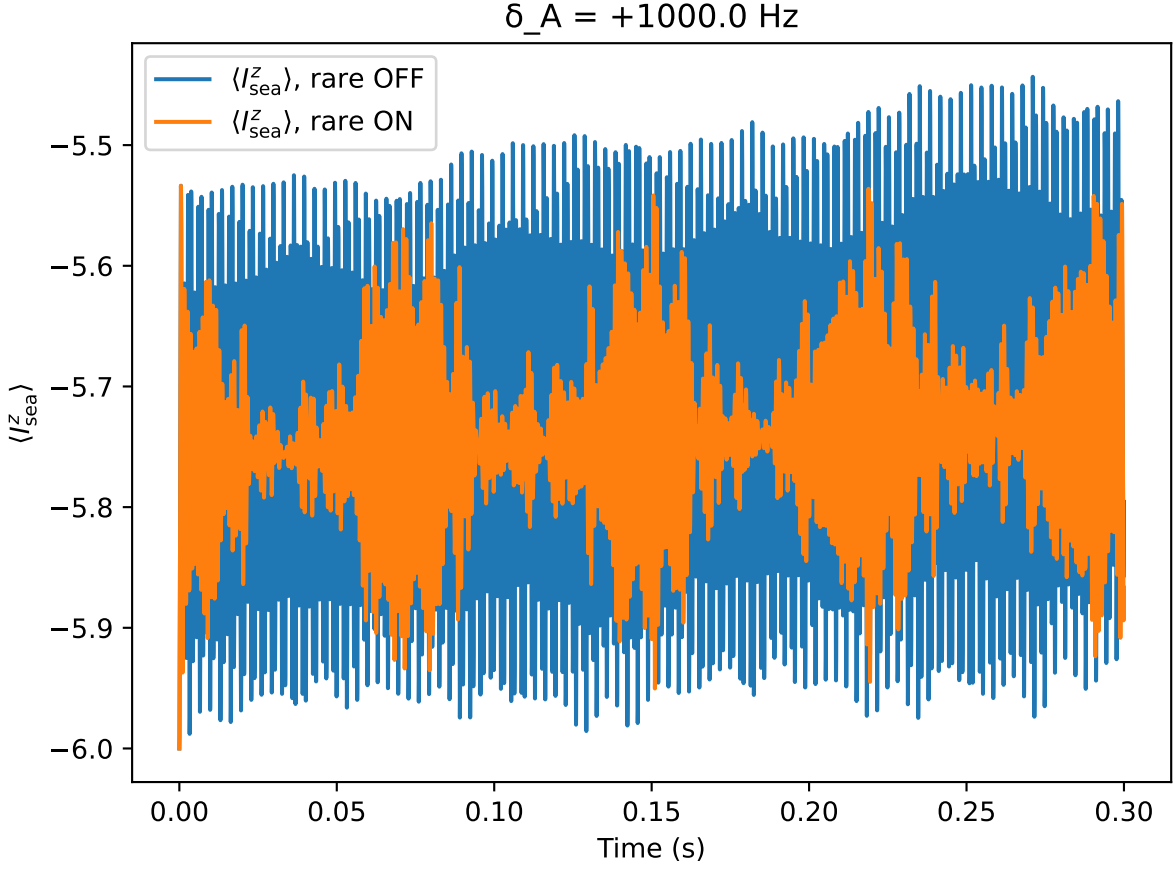

δ_A = +750.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
−5.3
−5.4
−5.5
−5.6
−5.7
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

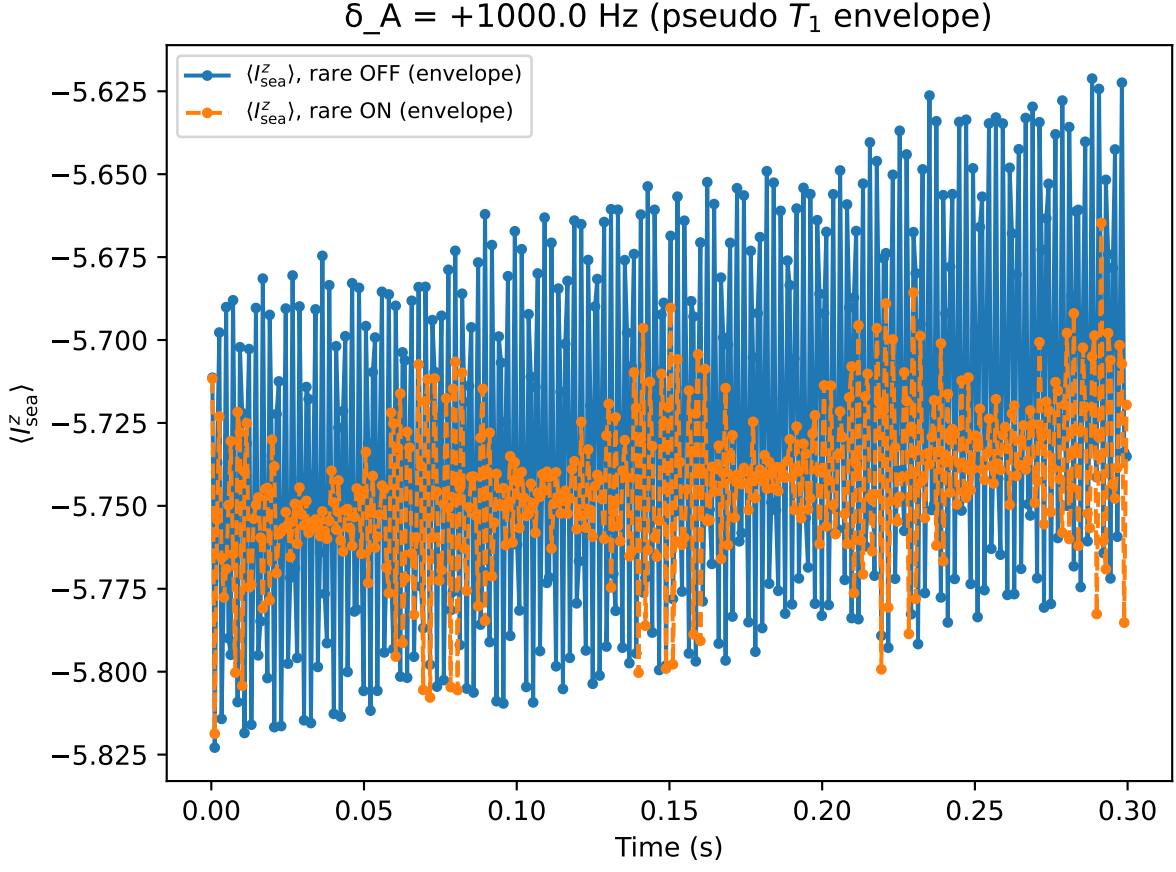

δ_A = +750.0 Hz (rare drive OFF)
⟨I^x_sea⟩
⟨I^y_sea⟩
⟨I^{x,y}_sea⟩
1
0
−1
−2
−3
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)

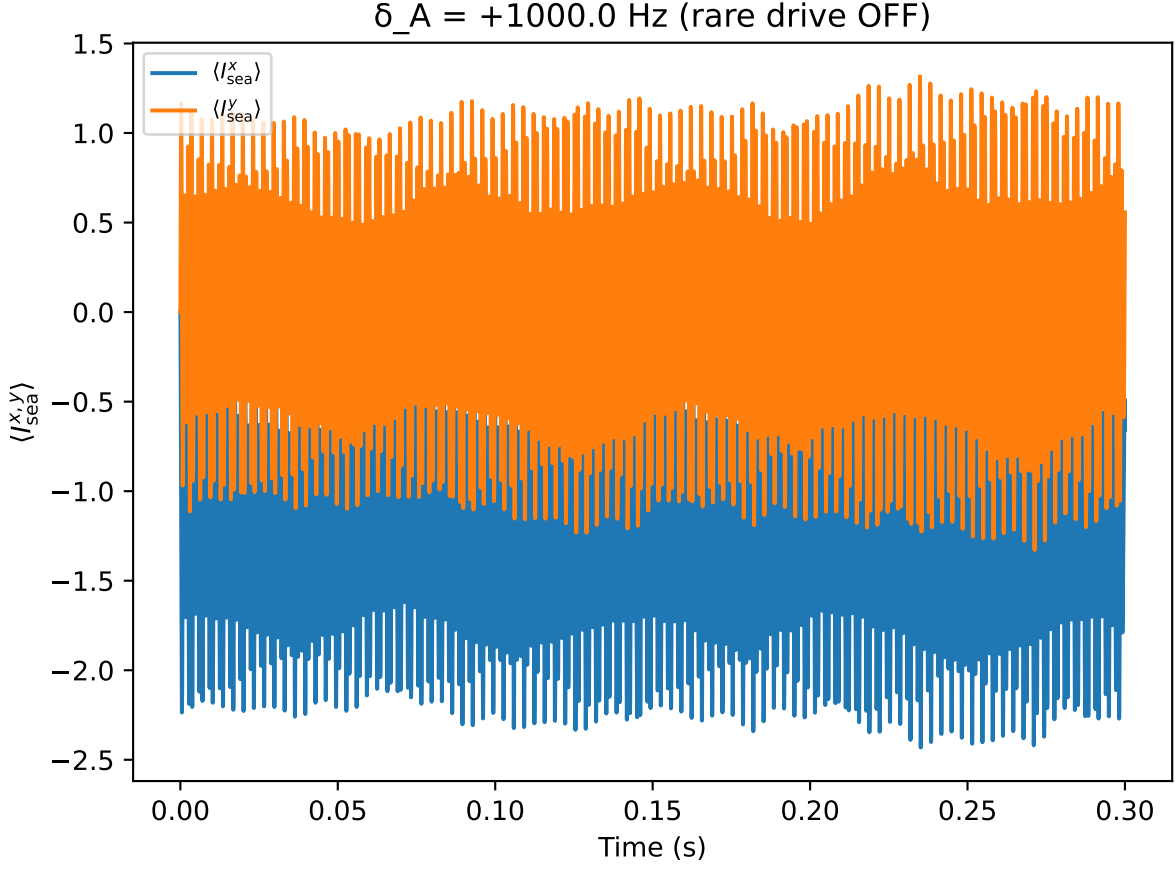

δ_A = +875.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
−5.3
−5.4
−5.5
−5.6
−5.7
−5.8
−5.9
−6.0
⟨I^z_{sea}⟩
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)


δ_A = +875.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
−5.50
−5.55
−5.60
−5.65
−5.70
−5.75
−5.80
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)


δ_A = +875.0 Hz (rare drive OFF)
⟨I^x_sea⟩
⟨I^y_sea⟩
⟨I^{x,y}_sea⟩
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)


δ_A = +1000.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
−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)


δ_A = +1000.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
−5.625
−5.650
−5.675
−5.700
−5.725
−5.750
−5.775
−5.800
−5.825
$\langle I^z_{sea} \rangle$
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time (s)


δ_A = +1000.0 Hz (rare drive OFF)
⟨I^x_sea⟩
⟨I^y_sea⟩
⟨I^{x,y}_sea⟩
Time (s)
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
0.00
0.05
0.10
0.15
0.20
0.25
0.30

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

delta_Hz	T_Iz_sea_off	T_Iz_sea_on
+0.0	0.753	0.548
+125.0	3.31	1.94
+250.0	NA	NA
+375.0	0.599	NA
+500.0	0.518	7.33
+625.0	1.19	NA
+750.0	NA	NA
+875.0	NA	NA
+1000.0	NA	NA