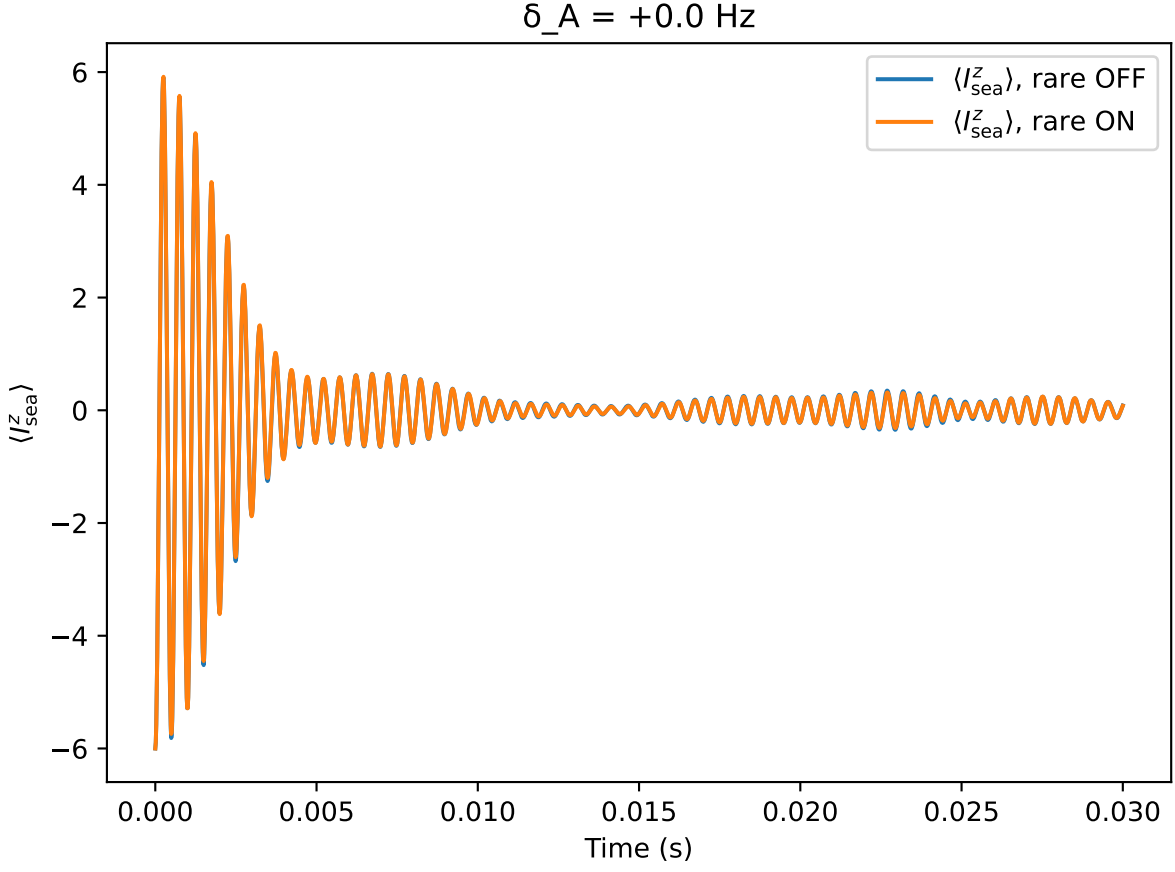
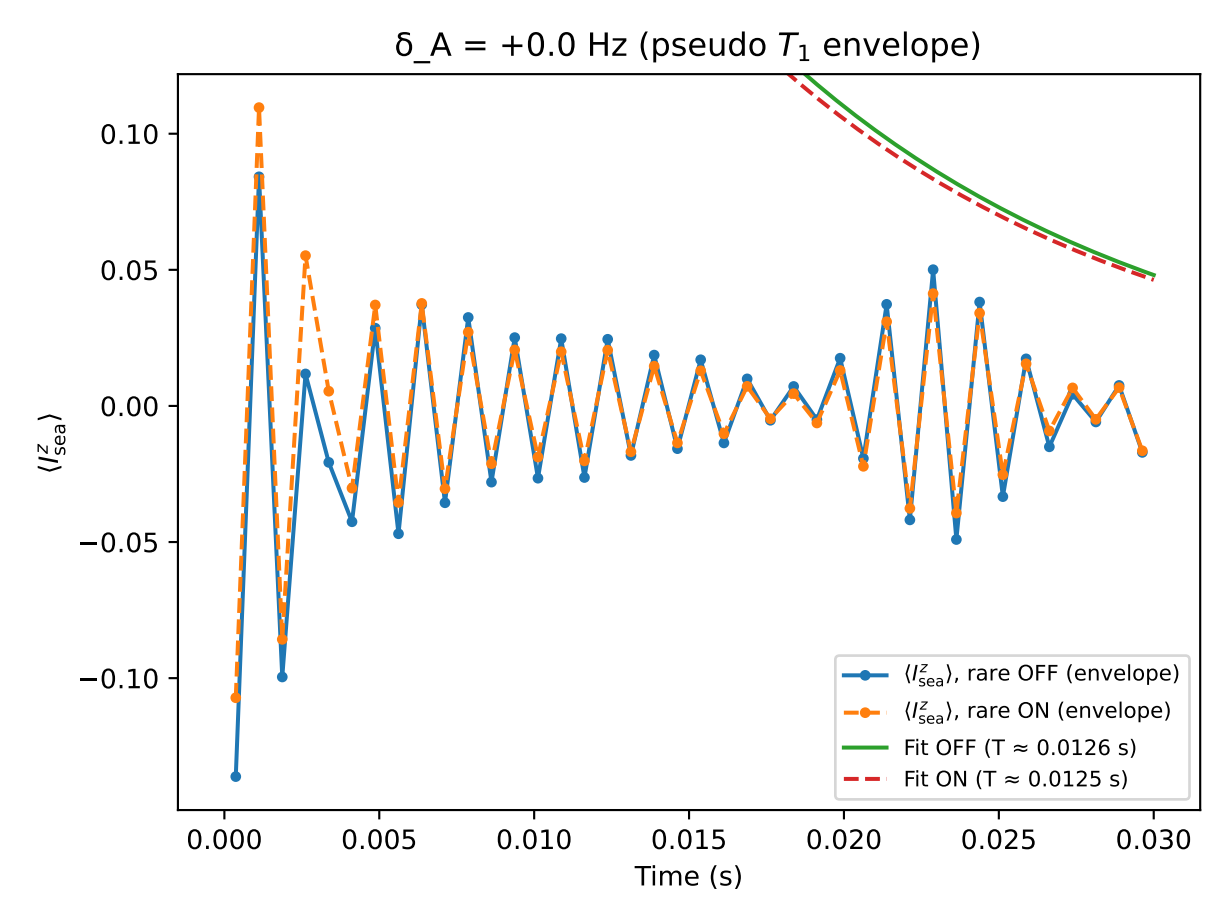
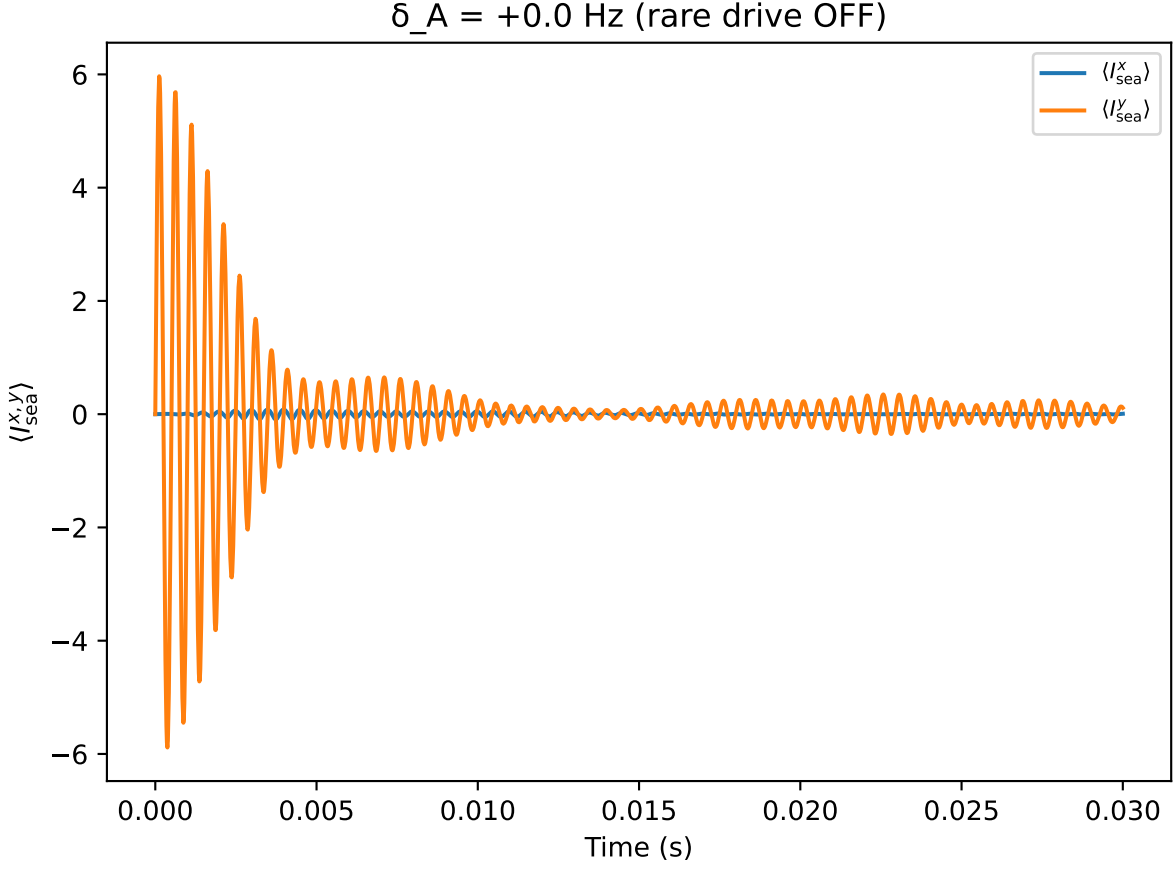
Sea detuning sweep report (Ga sea / Al rare)

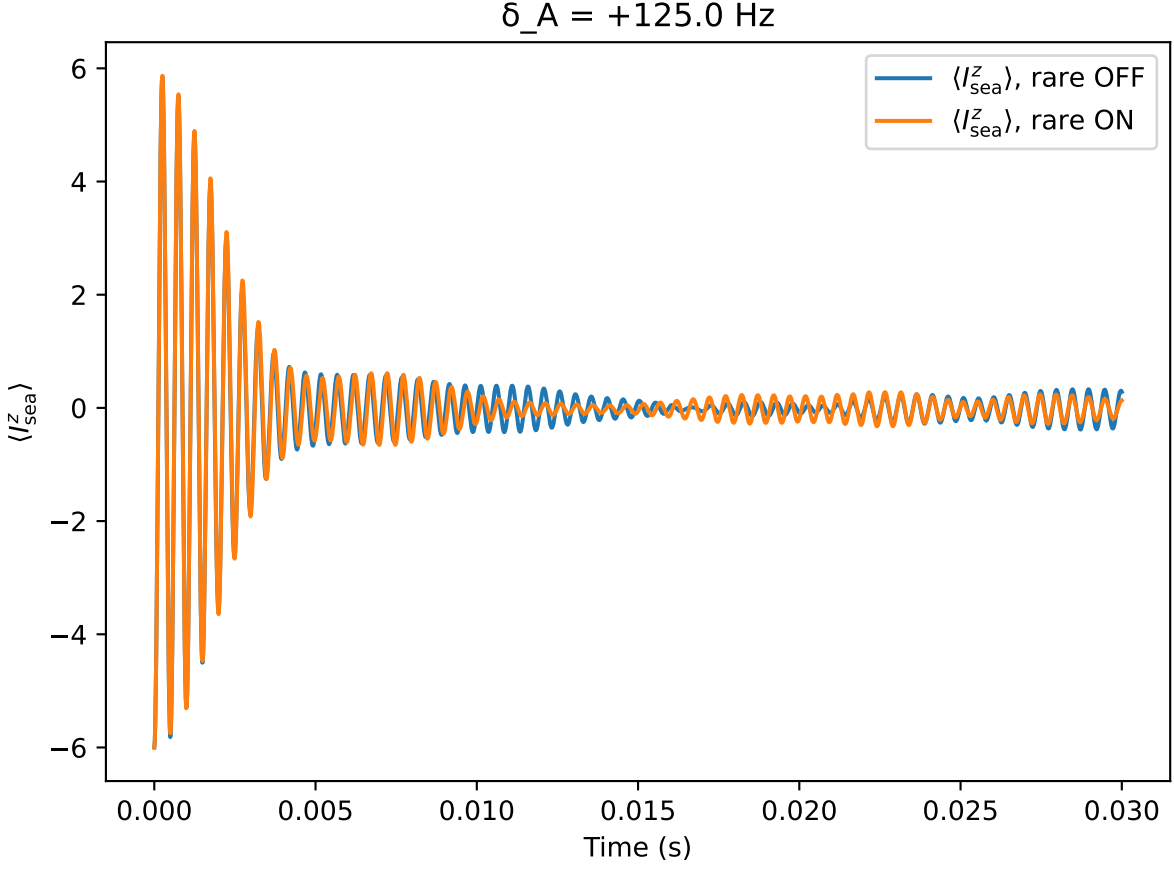
Global parameters (constant across sweep):
  f_Az (sea Larmor)   = 34.062 MHz
  f_Rz (rare Larmor)   = 33.308 MHz
  f1A (sea Rabi)   = 2.000 kHz
  f1R (rare Rabi)   = 1.000 kHz
  gamma_sea   = 7.134e+07 rad·s⁻¹·T⁻¹
  gamma_rare   = 6.976e+07 rad·s⁻¹·T⁻¹
  B0_common   = 3.000 T
  B1_sea   = 1.761e-04 T
  B1_rare   = 9.007e-05 T
  dipolar_scale_SI   = 1.055e-41
  shell_scale   = 0.300 nm
  t_final   = 3.000e-02 s
  steps   = 2000
  n_sea   = 12
  phi_sea   = 0.000 rad
  phi_rare   = 0.000 rad

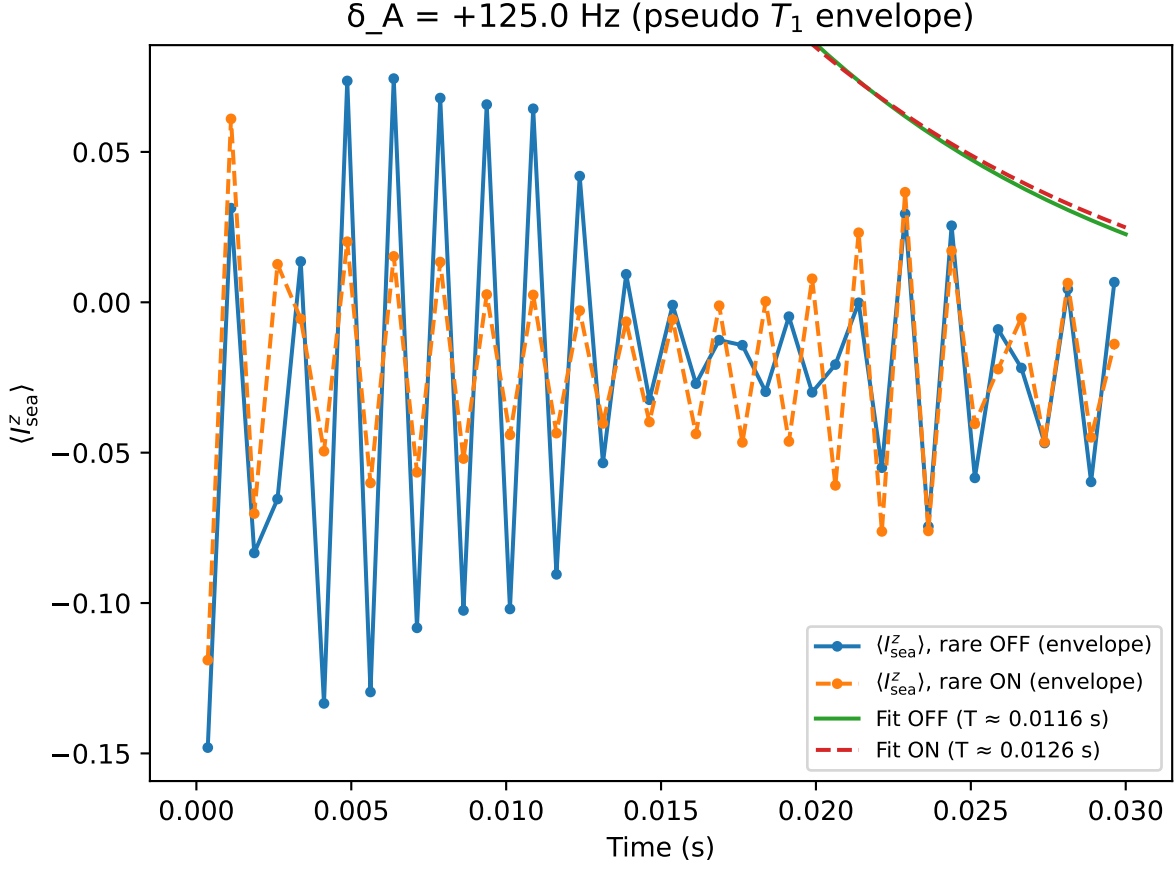
Sea detunings (δ_A = f_Az - f_rf,A) in Hz:
  +0.0, +125.0, +250.0, +375.0, +500.0, +625.0, +750.0, +875.0, +1000.0

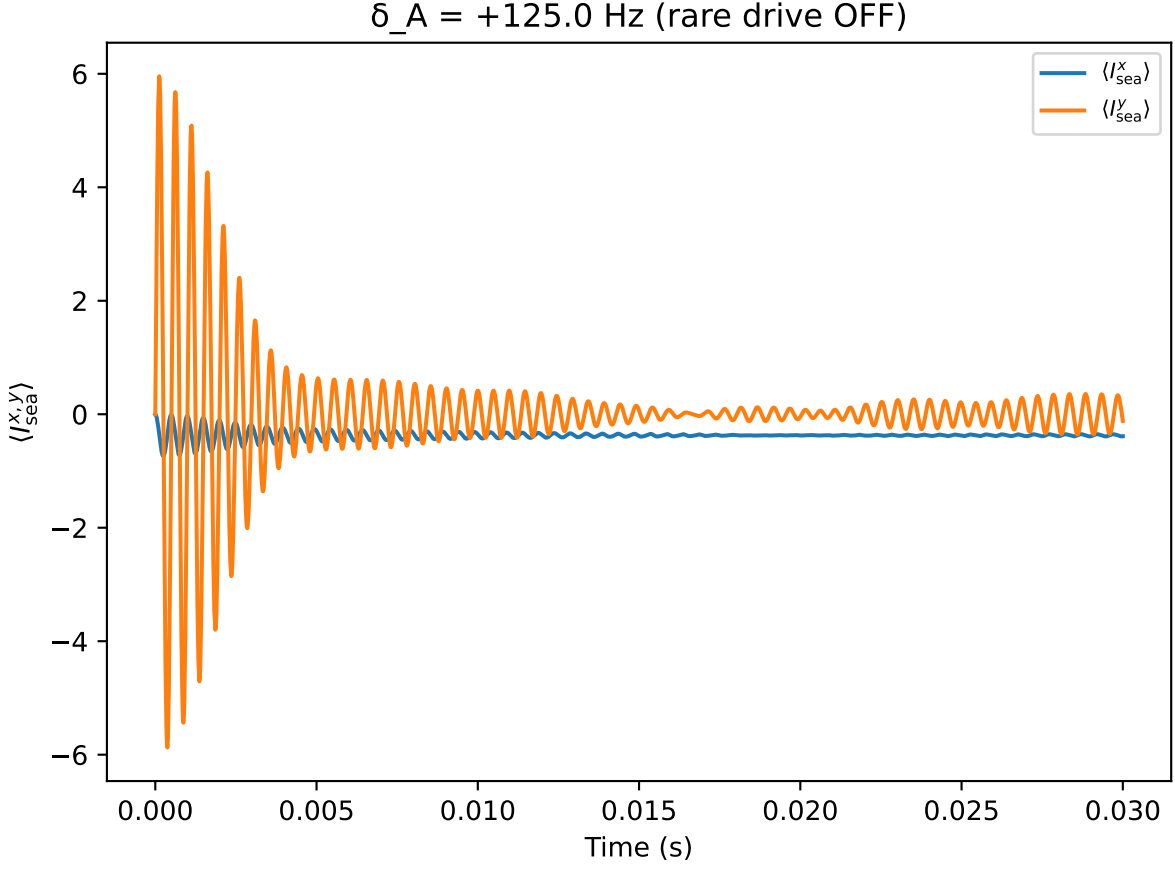

δ_A = +0.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
Time (s)
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030

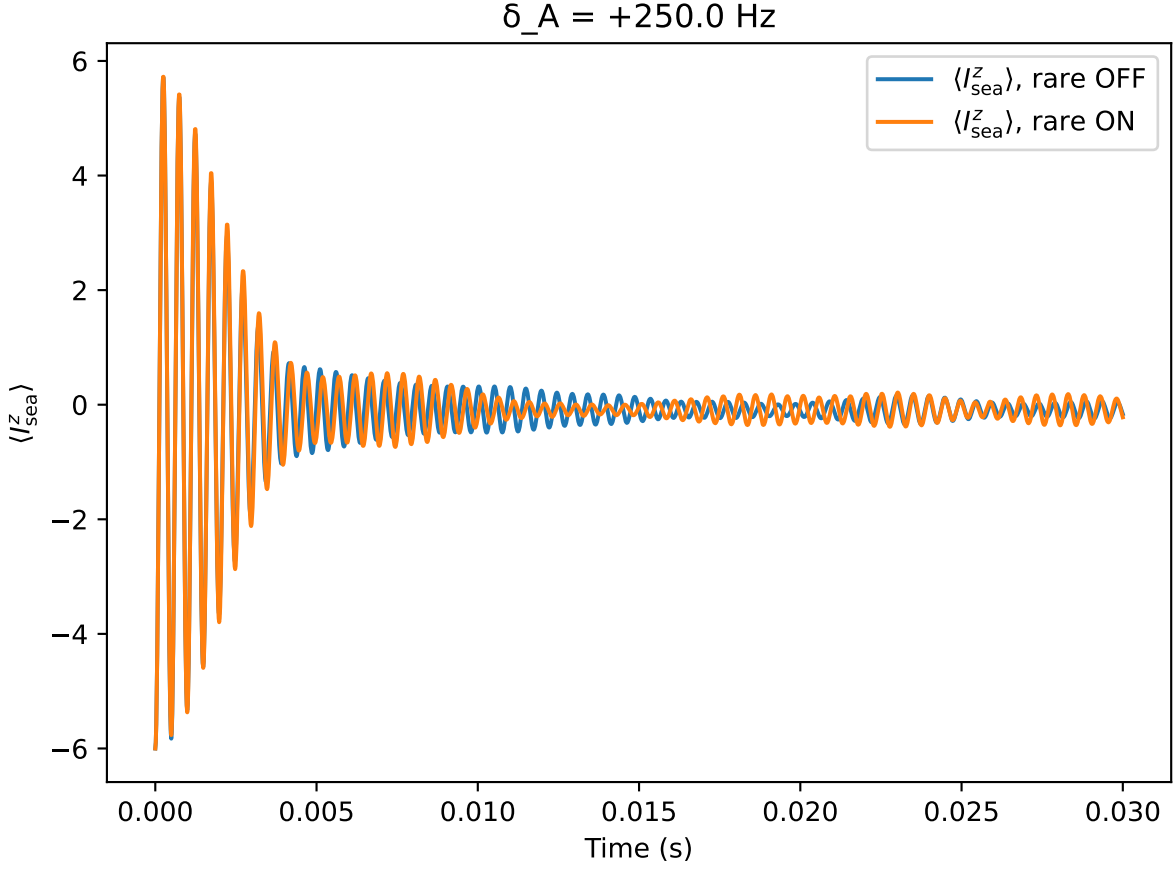

δ_A = +0.0 Hz (pseudo T_1 envelope)
0.10
0.05
0.00
−0.05
−0.10
$\langle I^z_{sea} \rangle$
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0126 s)
Fit ON (T ≈ 0.0125 s)

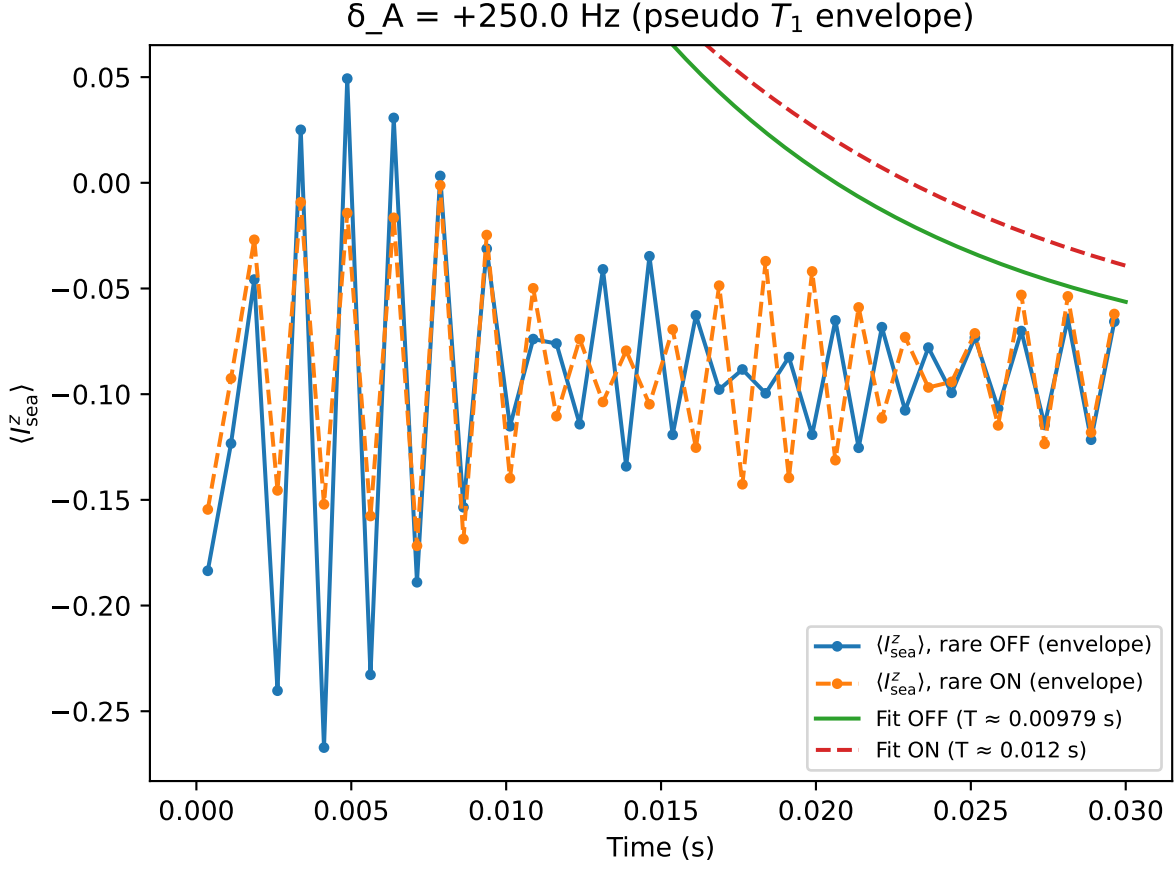

δ_A = +0.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

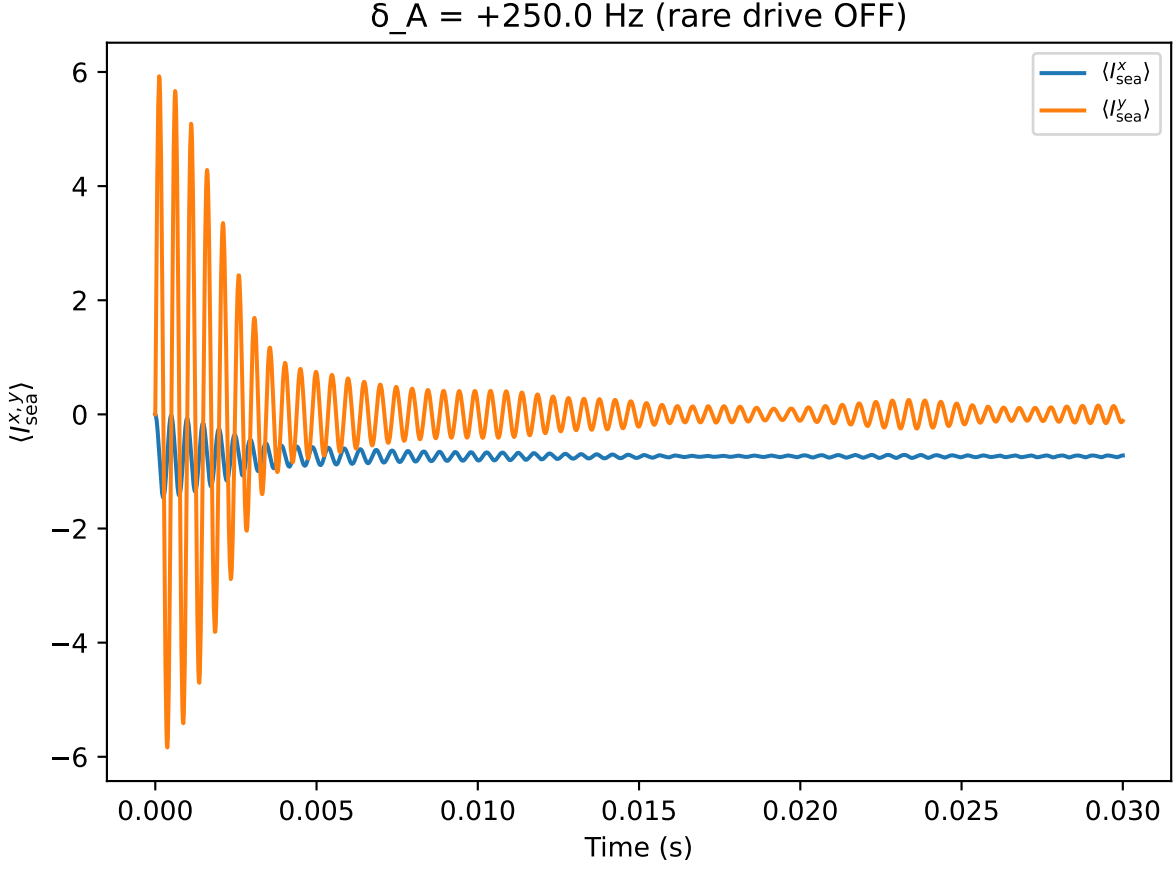

δ_A = +125.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
Time (s)
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030

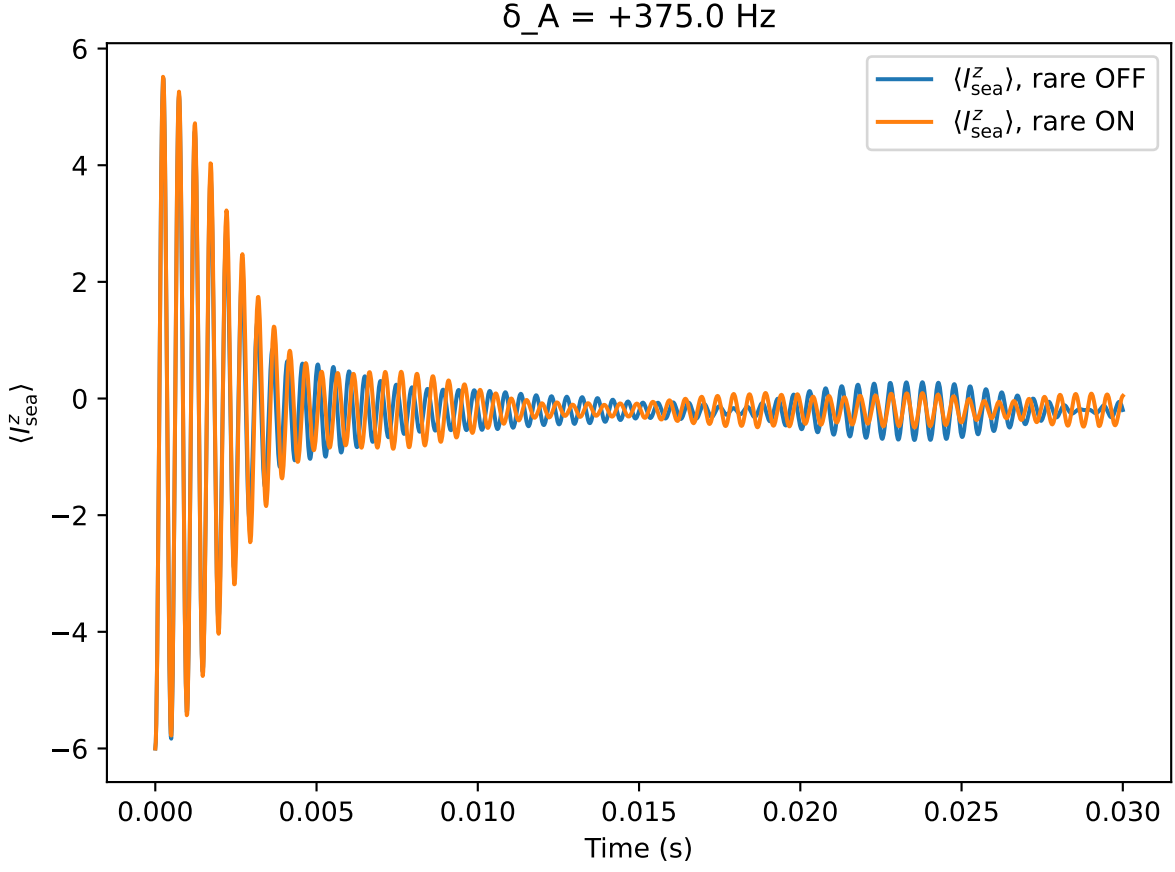

δ_A = +125.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
Time (s)
0.05
0.00
−0.05
−0.10
−0.15
0.000
0.005
0.010
0.015
0.020
0.025
0.030
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0116 s)
Fit ON (T ≈ 0.0126 s)

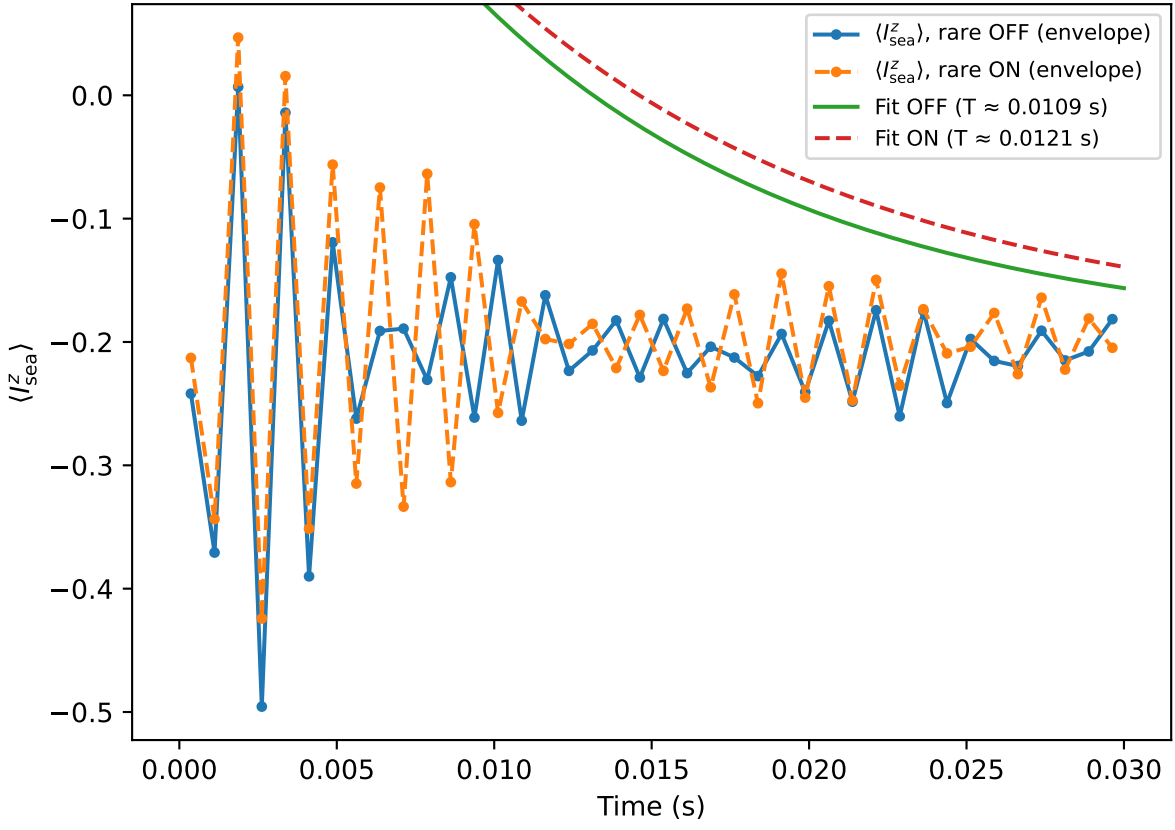

δ_A = +125.0 Hz (rare drive OFF)
$\langle I^{x}_{sea} \rangle$
$\langle I^{y}_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

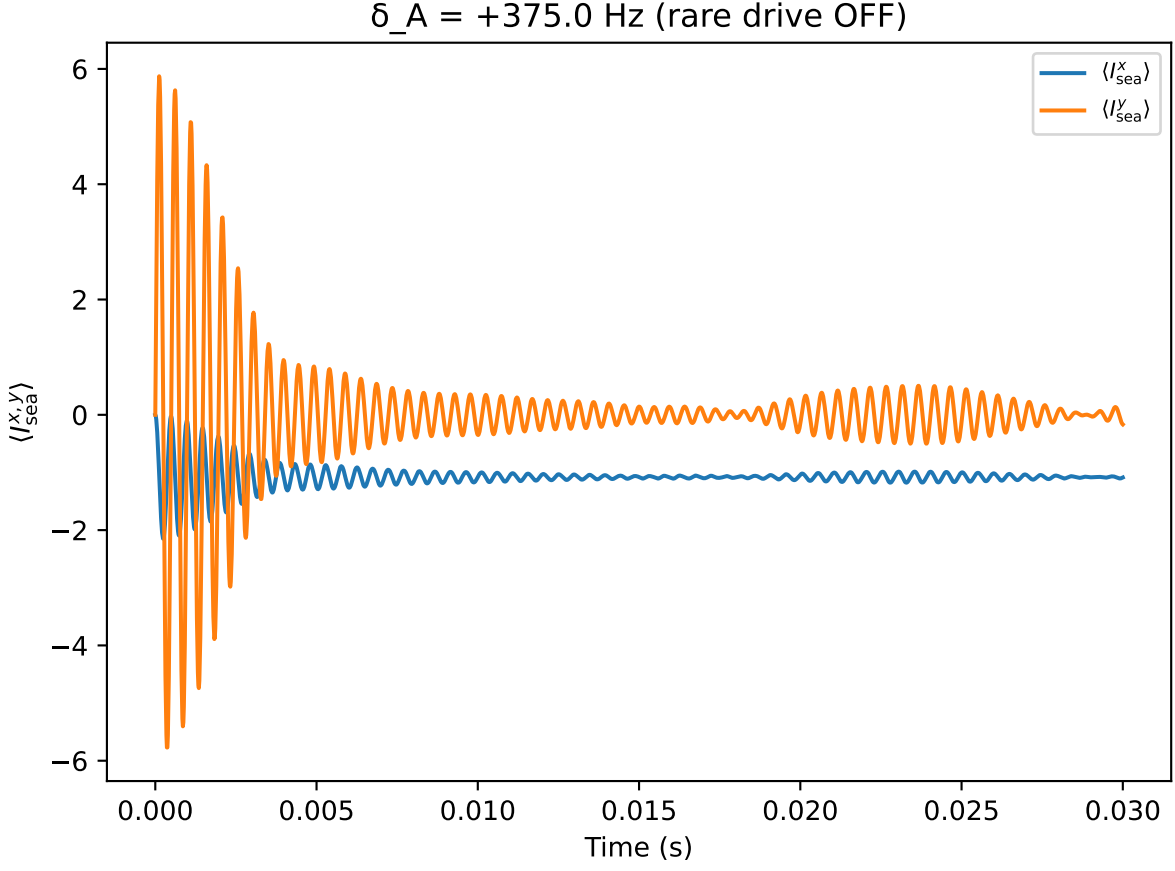

δ_A = +250.0 Hz
$\langle I^z_{sea} \rangle$, rare OFF
$\langle I^z_{sea} \rangle$, rare ON
$\langle I^z_{sea} \rangle$
Time (s)
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030

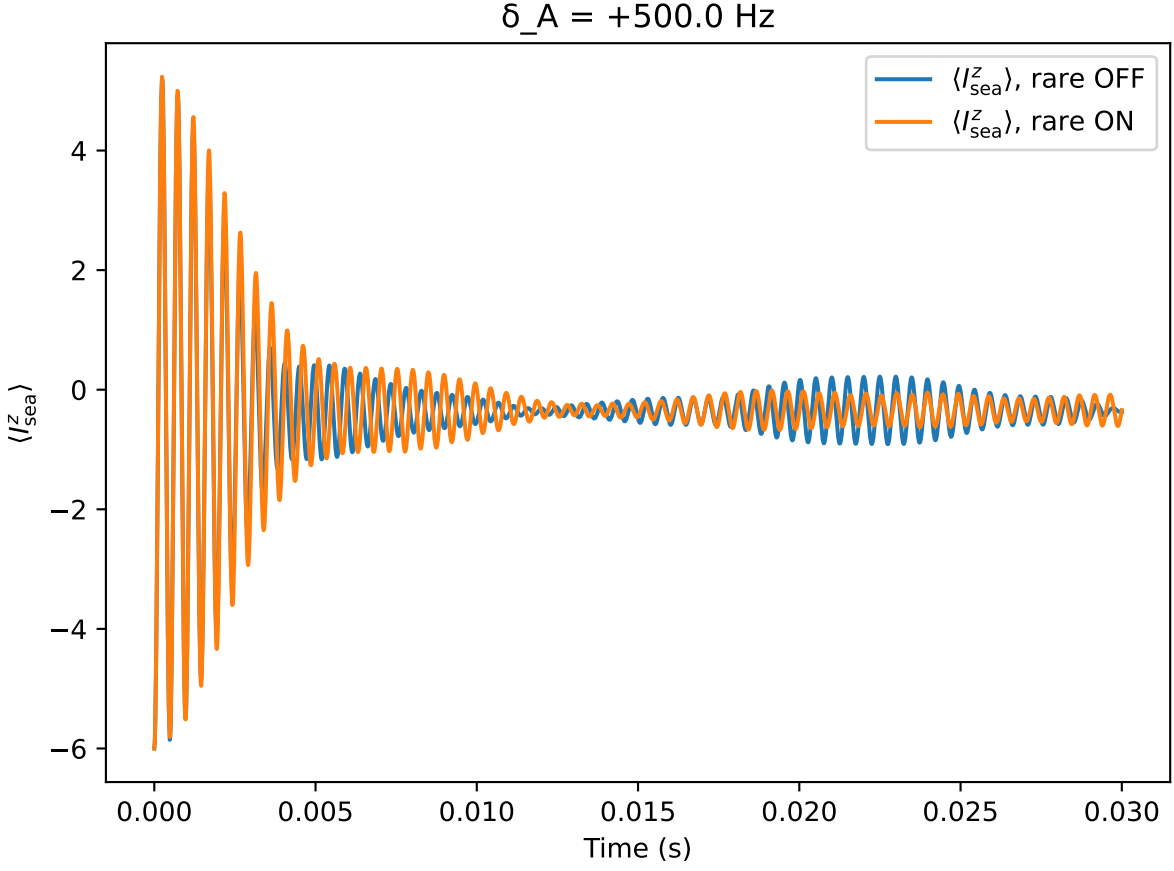

δ_A = +250.0 Hz (pseudo T_1 envelope)
0.05
0.00
−0.05
−0.10
−0.15
−0.20
−0.25
$\langle I^z_{sea} \rangle$
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.00979 s)
Fit ON (T ≈ 0.012 s)

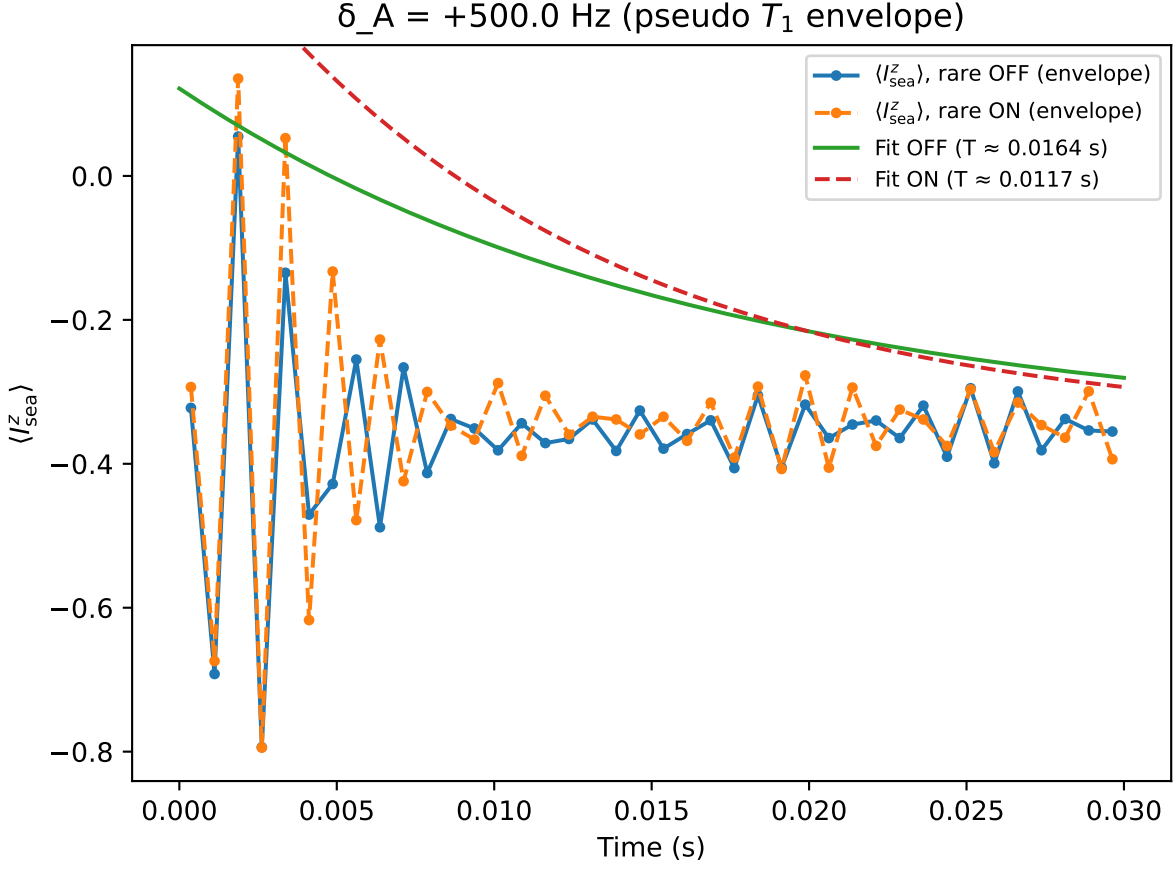

δ_A = +250.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

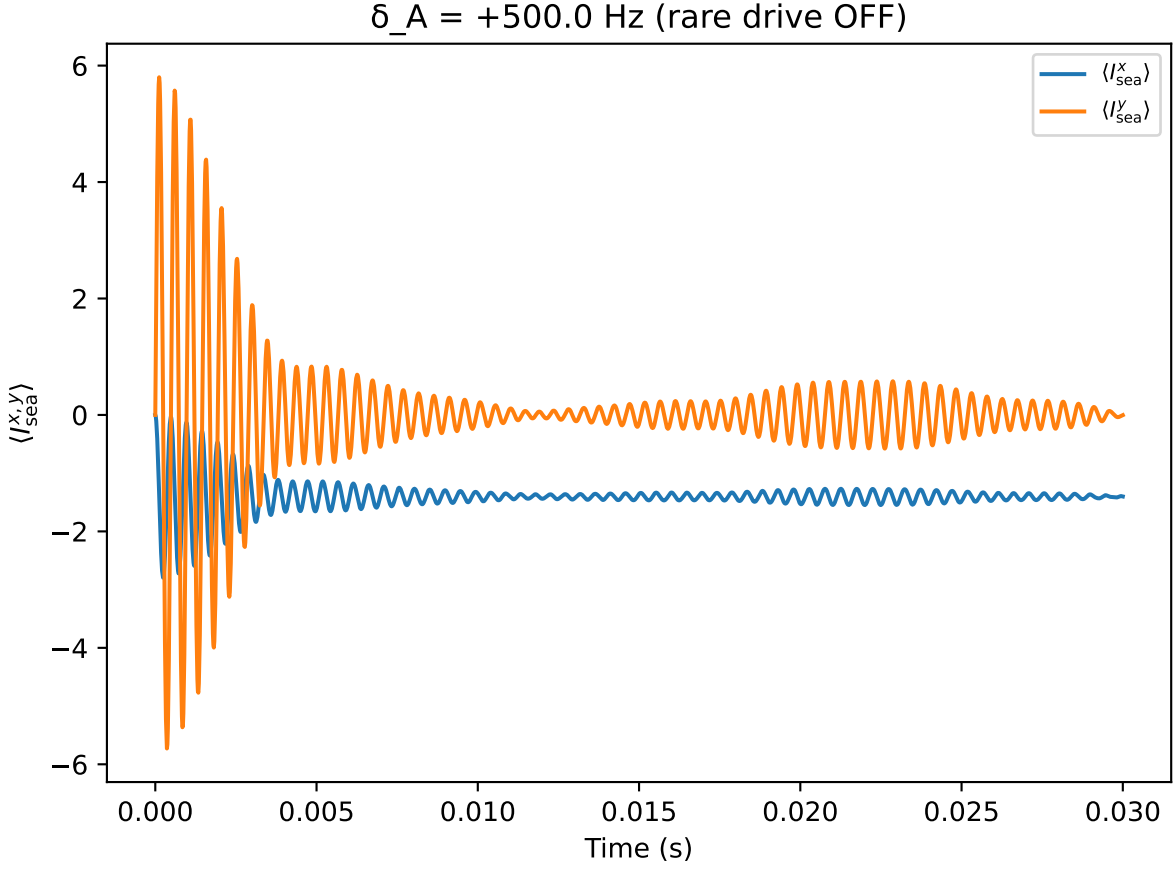

δ_A = +375.0 Hz
$\langle I^z_{sea} \rangle$, rare OFF
$\langle I^z_{sea} \rangle$, rare ON
$\langle I^z_{sea} \rangle$
Time (s)
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030

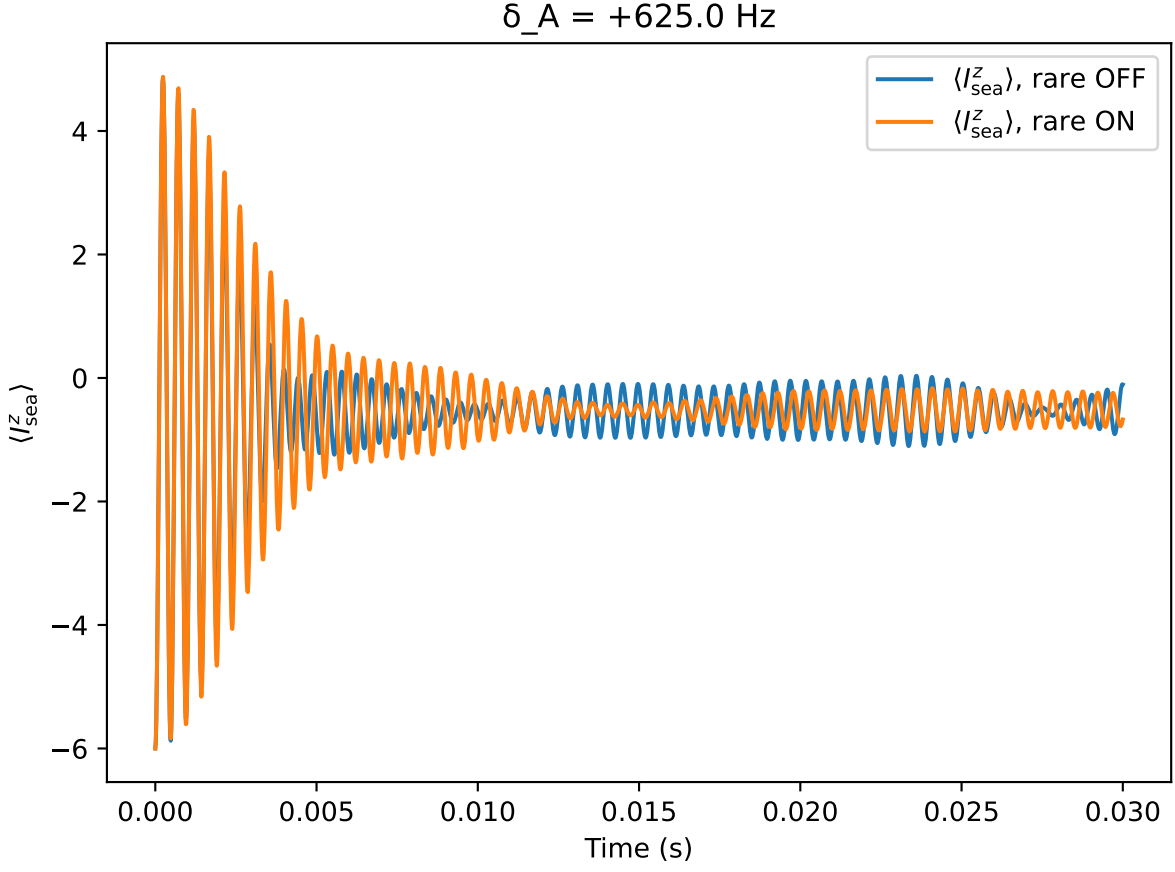

δ_A = +375.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0109 s)
Fit ON (T ≈ 0.0121 s)
$\langle I^z_{sea} \rangle$
0.0
−0.1
−0.2
−0.3
−0.4
−0.5
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

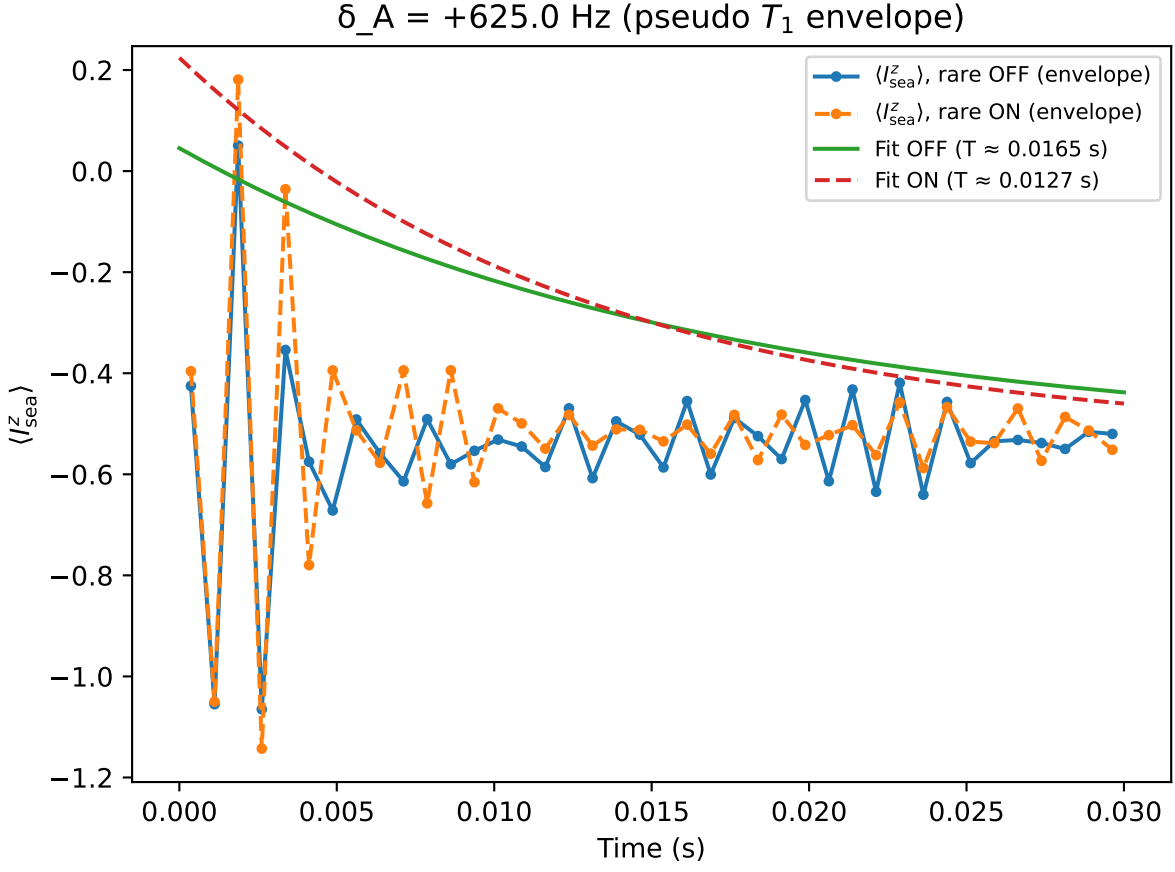

δ_A = +375.0 Hz (rare drive OFF)
$\langle I^{x,y}_{sea} \rangle$
$\langle I^{x}_{sea} \rangle$
$\langle I^{y}_{sea} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

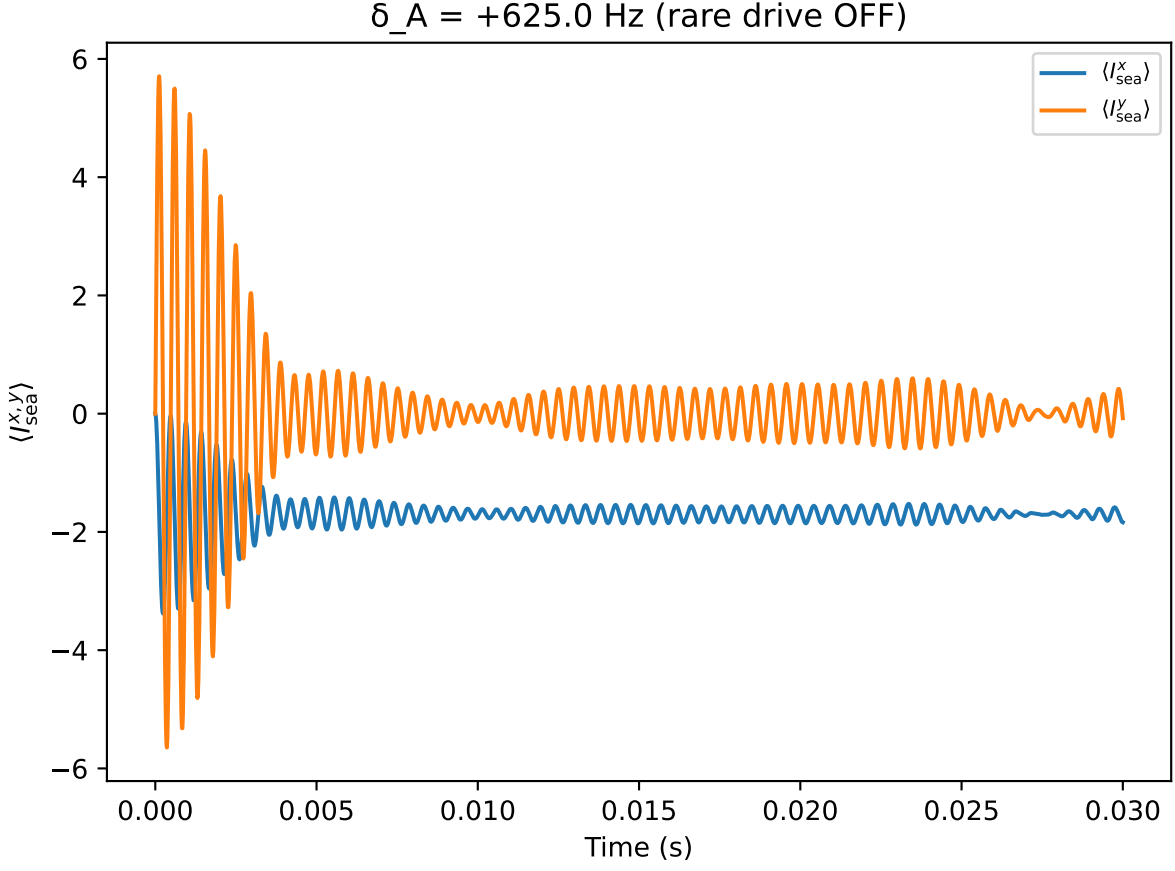

δ_A = +500.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

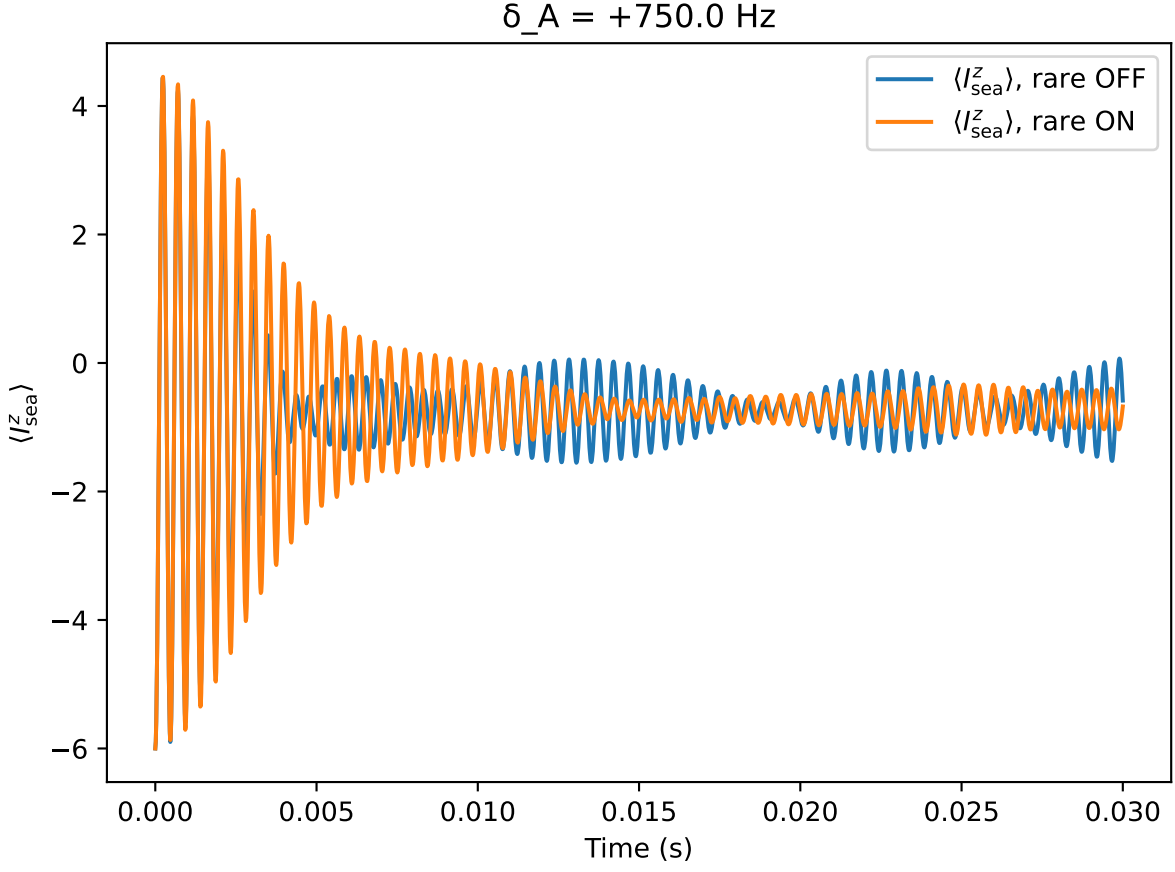

δ_A = +500.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0164 s)
Fit ON (T ≈ 0.0117 s)
$\langle I^z_{sea} \rangle$
0.0
−0.2
−0.4
−0.6
−0.8
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

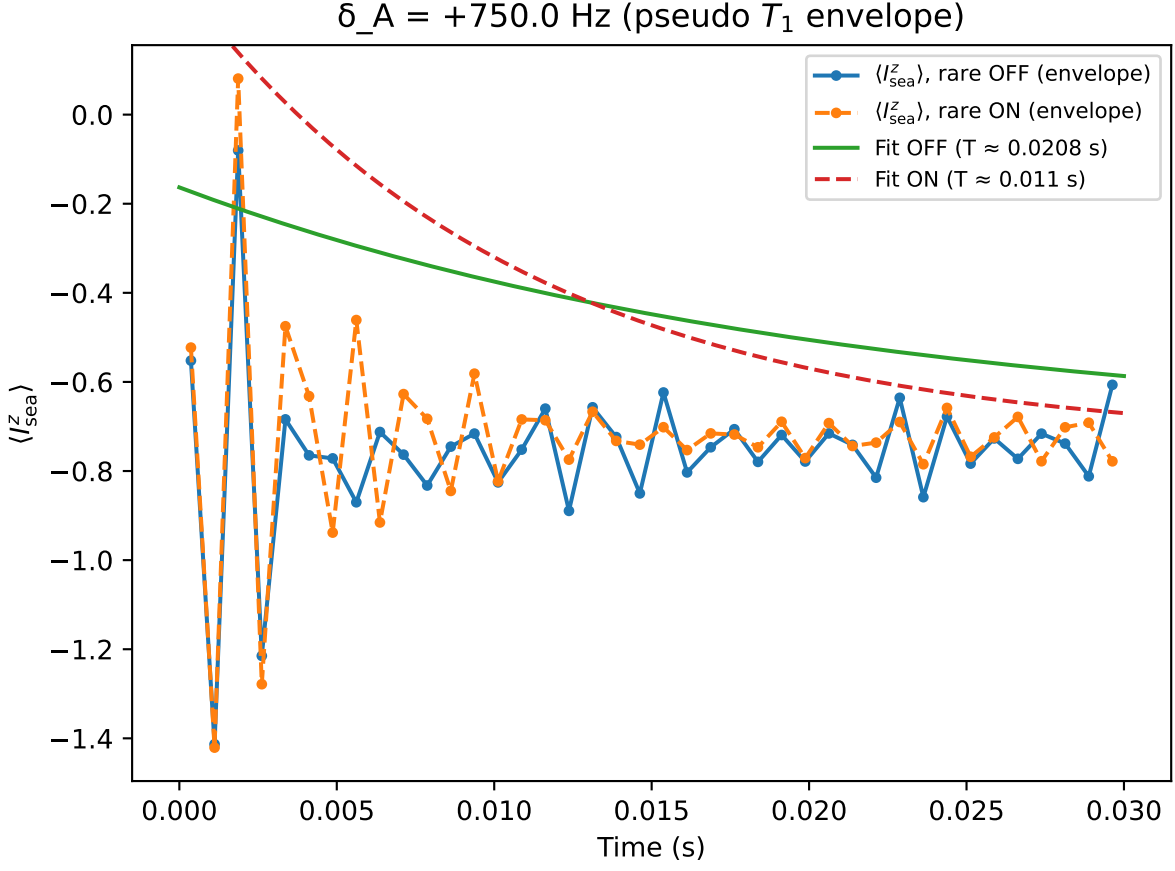

δ_A = +500.0 Hz (rare drive OFF)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

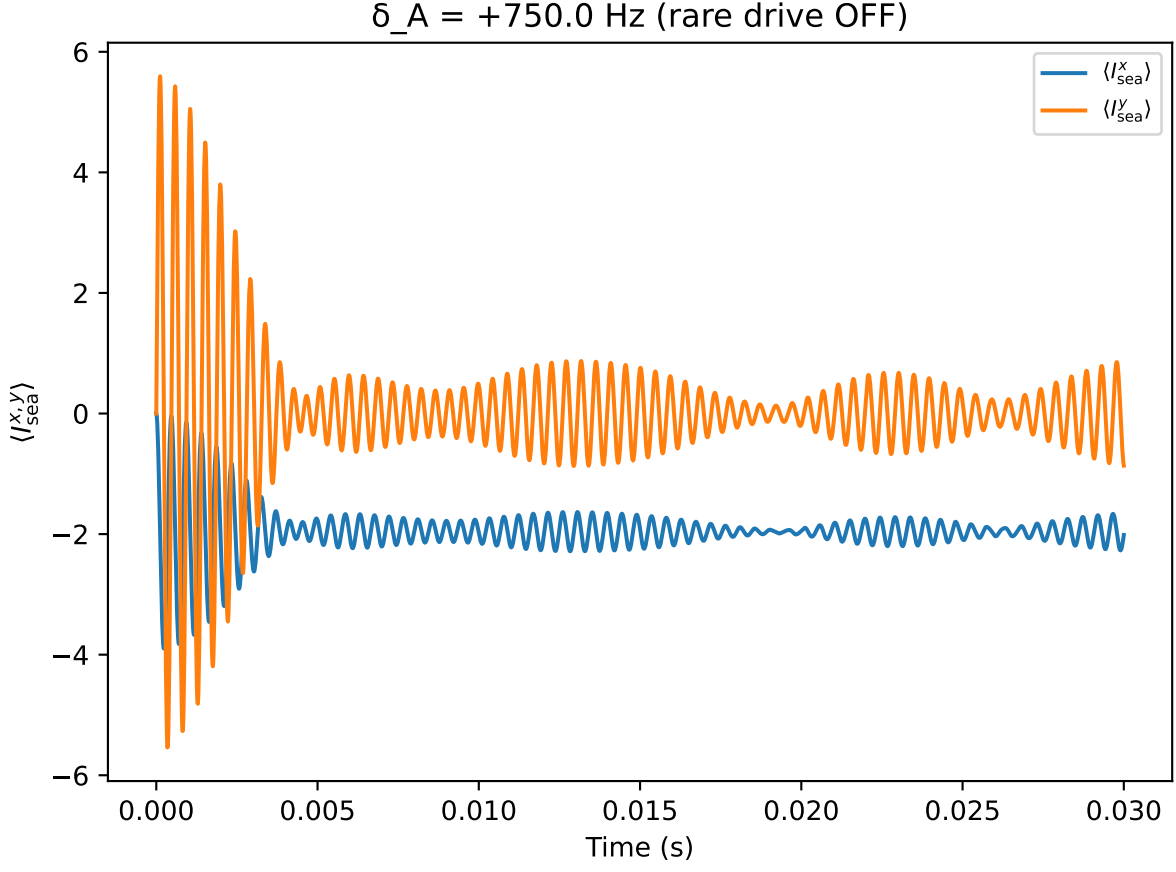

δ_A = +625.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

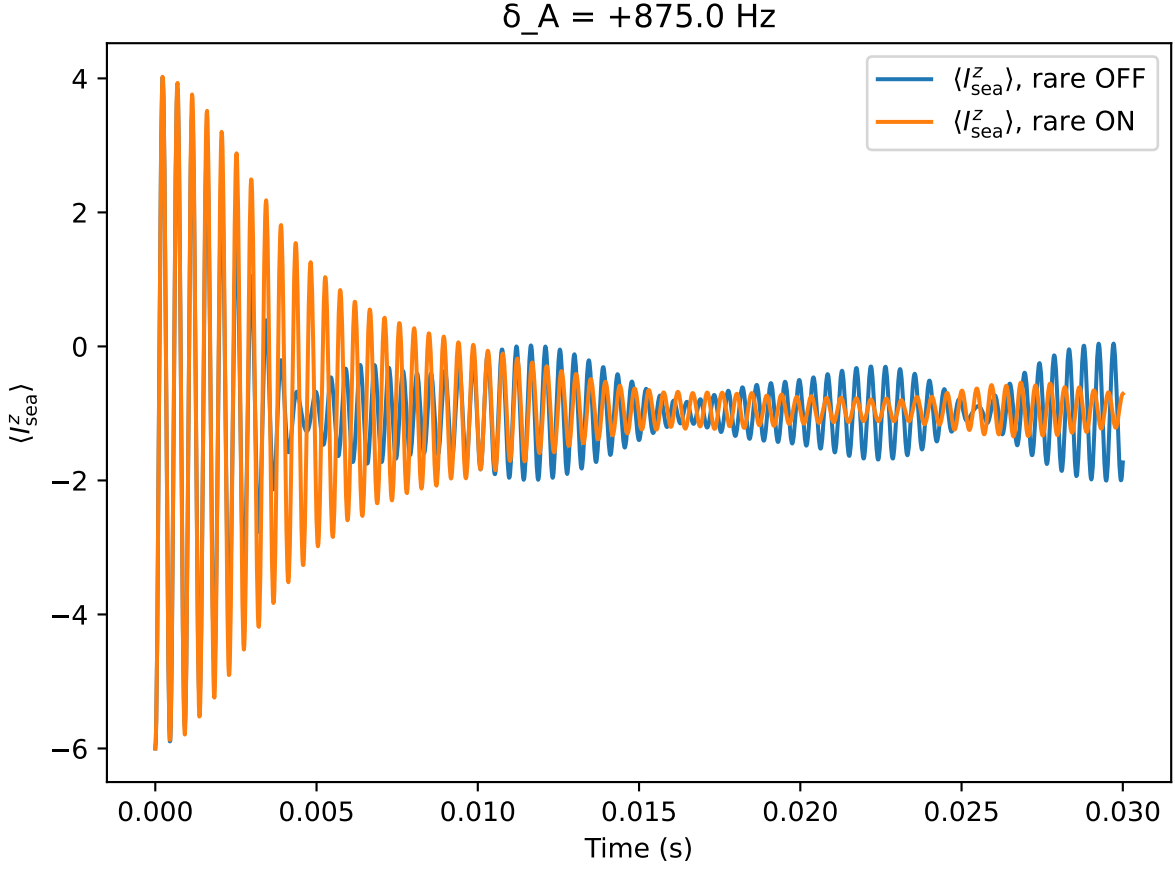

δ_A = +625.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0165 s)
Fit ON (T ≈ 0.0127 s)
$\langle I^z_{sea} \rangle$
Time (s)
0.2
0.0
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
0.000
0.005
0.010
0.015
0.020
0.025
0.030

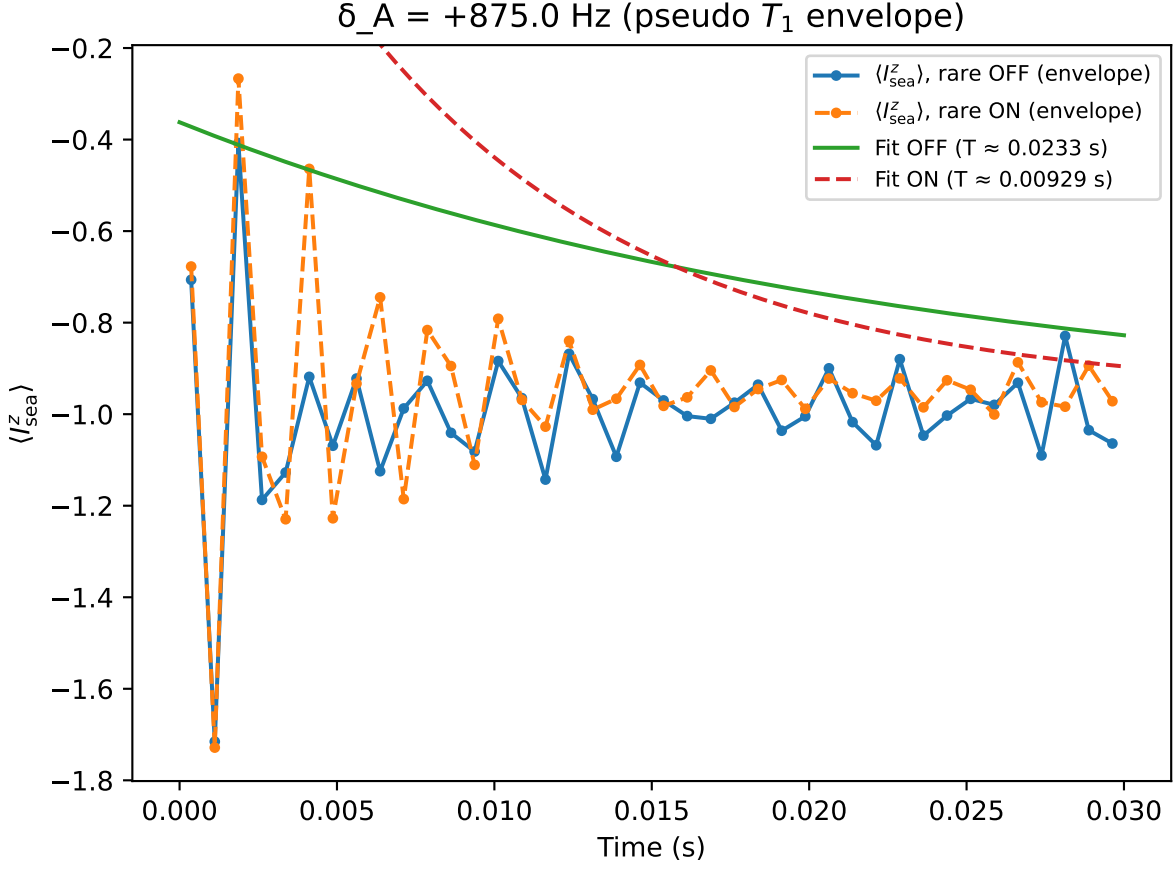

δ_A = +625.0 Hz (rare drive OFF)
$\langle I^{x}_{\mathrm{sea}} \rangle$
$\langle I^{y}_{\mathrm{sea}} \rangle$
$\langle I^{x,y}_{\mathrm{sea}} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

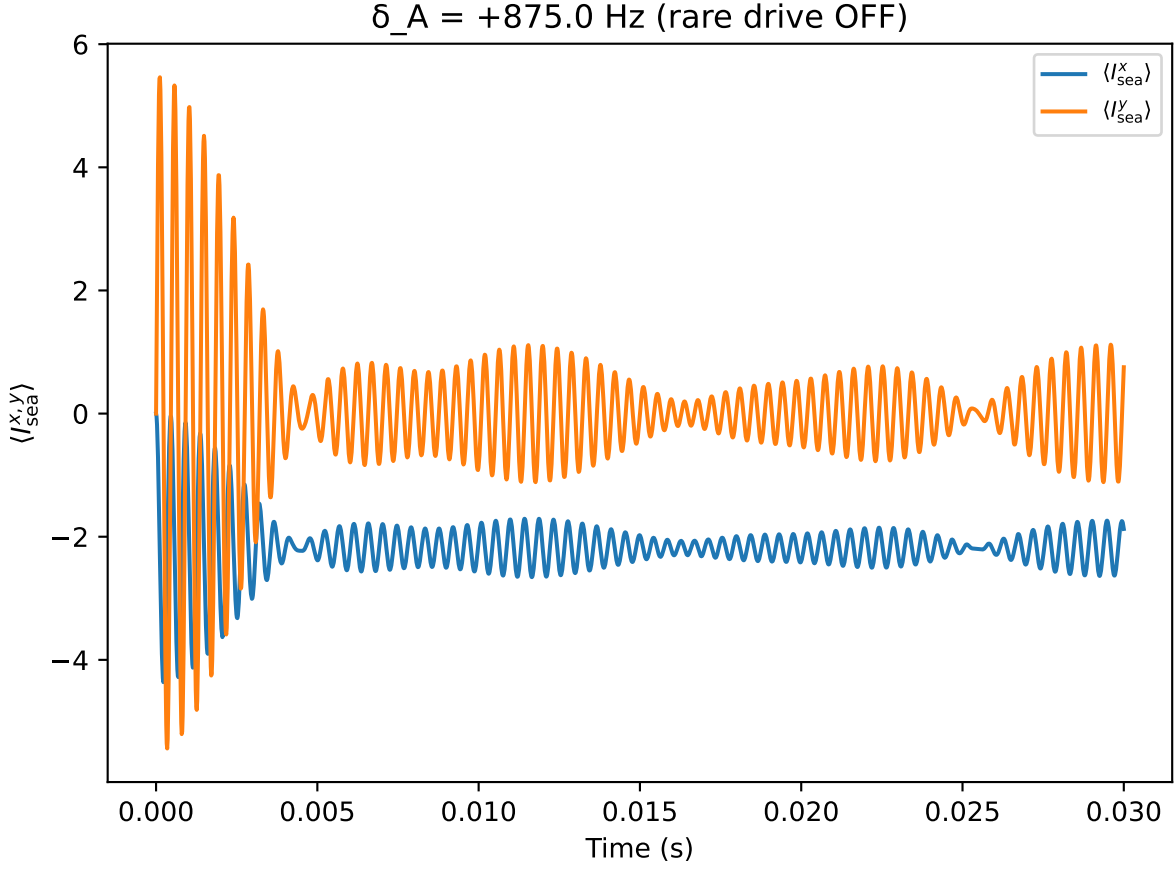

δ_A = +750.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

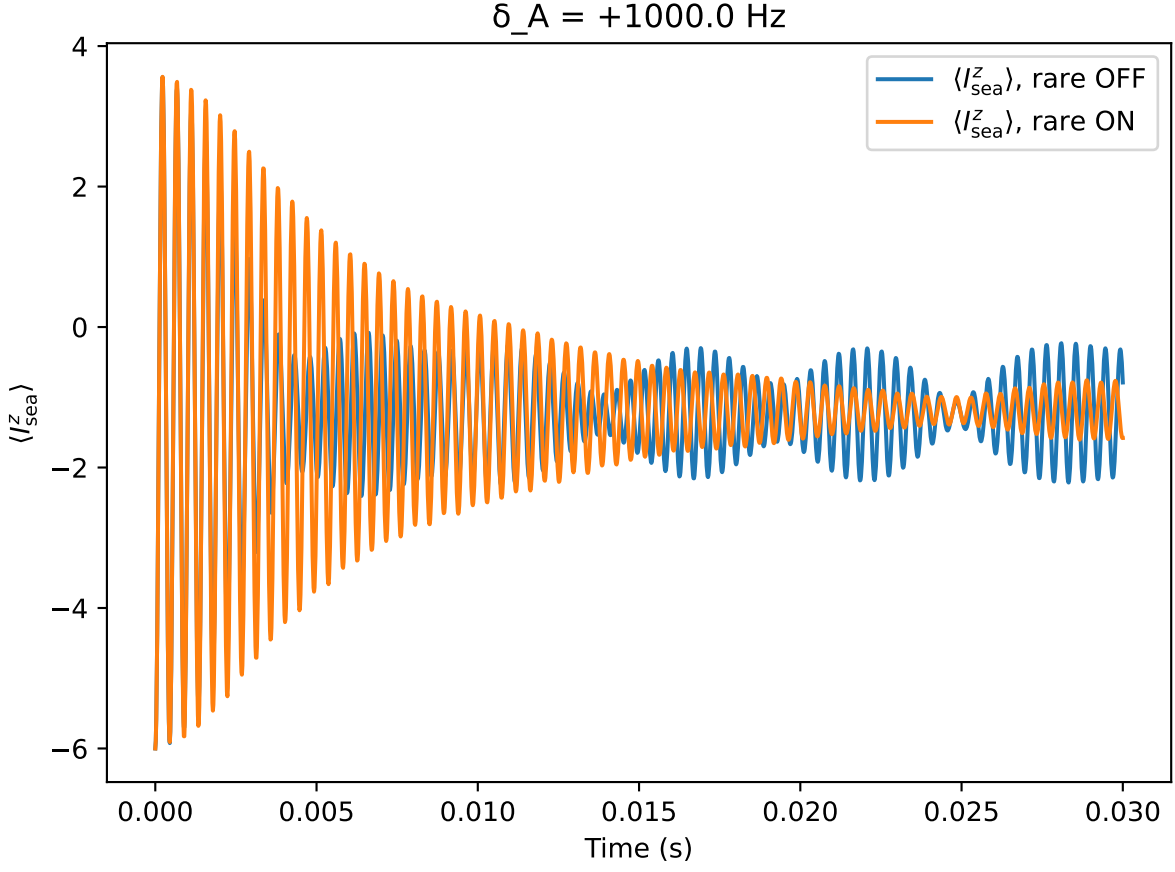

δ_A = +750.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0208 s)
Fit ON (T ≈ 0.011 s)
$\langle I^z_{sea} \rangle$
0.0
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
−1.4
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

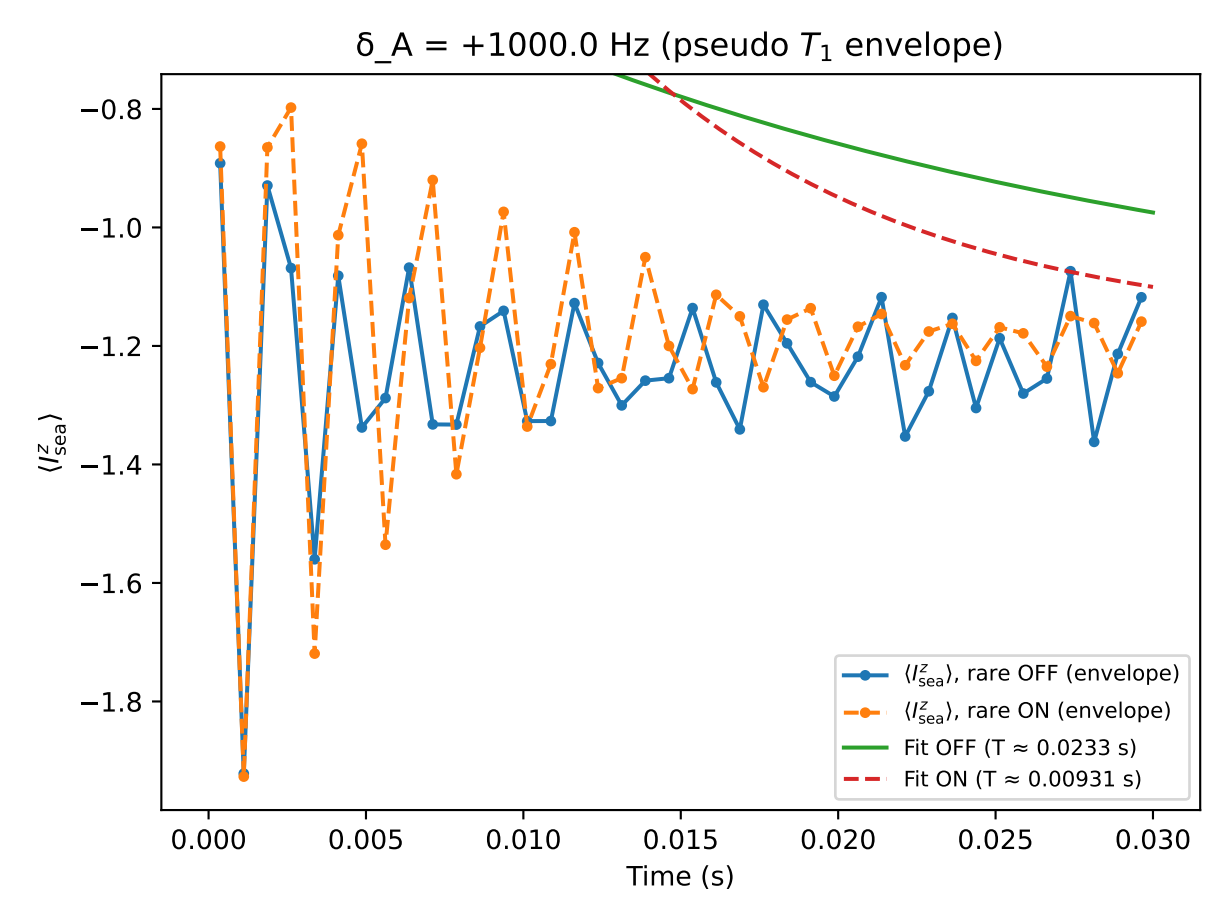

δ_A = +750.0 Hz (rare drive OFF)
$\langle I^{x}_{sea} \rangle$
$\langle I^{y}_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
6
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

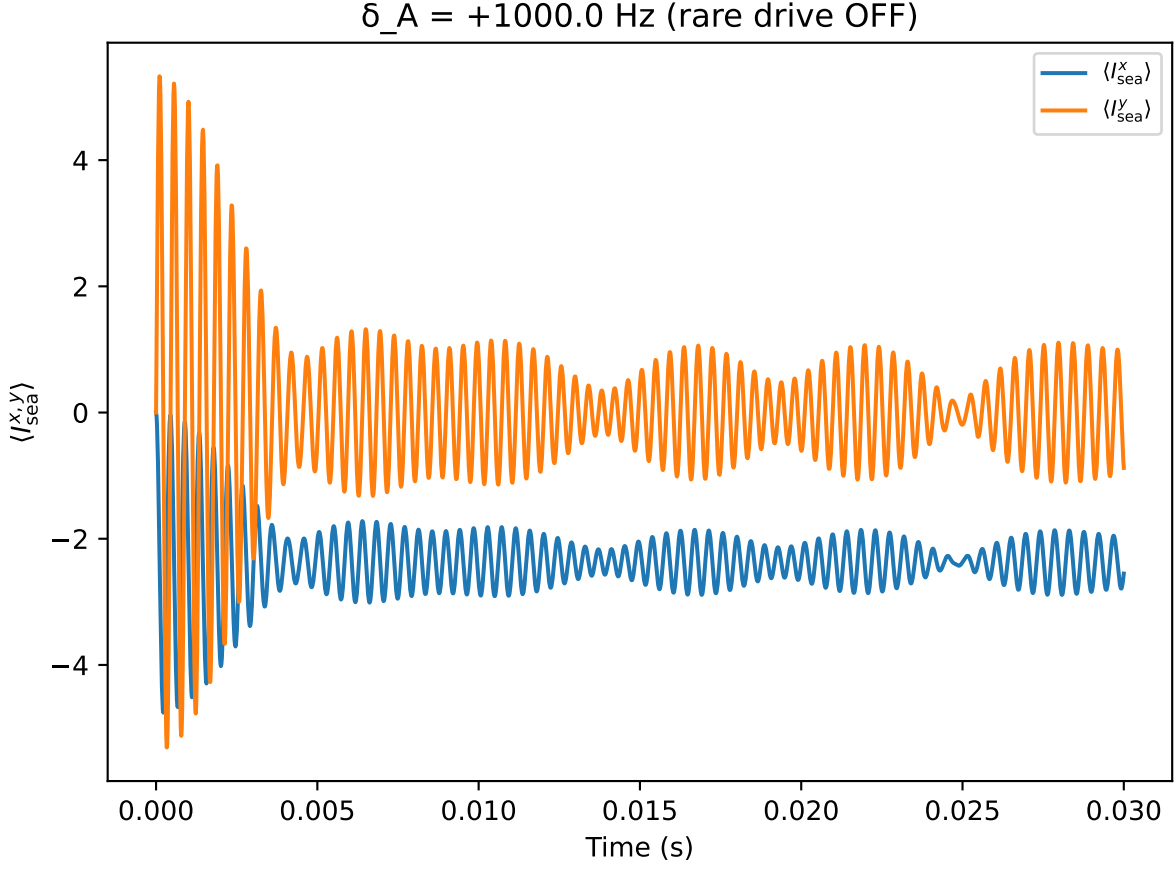

δ_A = +875.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
Time (s)
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030


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)
Fit OFF (T ≈ 0.0233 s)
Fit ON (T ≈ 0.00929 s)
$\langle I^z_{sea} \rangle$
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
−1.4
−1.6
−1.8
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)


δ_A = +875.0 Hz (rare drive OFF)
$\langle I^{x}_{sea} \rangle$
$\langle I^{y}_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
6
4
2
0
−2
−4
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)


δ_A = +1000.0 Hz
⟨I^z_{sea}⟩, rare OFF
⟨I^z_{sea}⟩, rare ON
⟨I^z_{sea}⟩
Time (s)
4
2
0
−2
−4
−6
0.000
0.005
0.010
0.015
0.020
0.025
0.030


δ_A = +1000.0 Hz (pseudo T_1 envelope)
$\langle I^z_{sea} \rangle$
−0.8
−1.0
−1.2
−1.4
−1.6
−1.8
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)
$\langle I^z_{sea} \rangle$, rare OFF (envelope)
$\langle I^z_{sea} \rangle$, rare ON (envelope)
Fit OFF (T ≈ 0.0233 s)
Fit ON (T ≈ 0.00931 s)


δ_A = +1000.0 Hz (rare drive OFF)
$\langle I^x_{sea} \rangle$
$\langle I^y_{sea} \rangle$
$\langle I^{x,y}_{sea} \rangle$
4
2
0
−2
−4
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Time (s)

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

delta_Hz	T_Iz_sea_off	T_Iz_sea_on
+0.0	0.0126	0.0125
+125.0	0.0116	0.0126
+250.0	0.00979	0.012
+375.0	0.0109	0.0121
+500.0	0.0164	0.0117
+625.0	0.0165	0.0127
+750.0	0.0208	0.011
+875.0	0.0233	0.00929
+1000.0	0.0233	0.00931