```
1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696697e+02, 3.85446805e+04, 8.29132859e-04, 1.66544906e+00,
                                                                                                                                   1.54936904e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                  [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696698e+02, 3.85446805e+04, 8.29132859e-04, 1.66544906e+00,
                                                                                                                                   1.45993774e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                  [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696700e+02, 3.85446805e+04, 8.29132858e-04, 1.66544907e+00,
                                                                                                                                   1.50802618e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                  [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696700e+02, 3.85446805e+04, 8.29132858e-04, 1.66544907e+00,
                                                                                                                                   1.49090848e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                  [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696699e+02, 3.85446805e+04, 8.29132860e-04, 1.66544906e+00,
                                                                                                                                   1.54273912e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                  [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.09654125e+00]
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696699e+02, 3.85446805e+04, 8.29132858e-04, 1.66544907e+00,
                                                                                                                                   1.26757754e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                   [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
               ['SM data type data plots for mutation', 'Outout@19e+02, 3.85446805e+04, 5.00742505e+04, 1.66544906e+00, 1.66544906e+00, 1.66544906e+00, 1.60632483e+0.0, 1.6063248648646486646466646666666666666
   inducer -> sensor (GFP output)
                                                                                                                                   1.91617561e+03, 1.8874240 --+-4Converged 88e-03, 8.20433340e-01,
                                                                                                                                   2.46696700e+02, 3.85446805e+04converged 58e-04, 1.66544907e+00,
                                                                                                                                  1.51614829e-13, 1.60632483e+00, 2.2772646e+00, 1.42566852e+00], [6.18047086e+02, 1.62788566e+0 Converged 79e+03, 1.09654125e+00,
                                                                                  4 \times 10^3
                                                                                                                                   1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696696e+02, 3.$5446805e+04, 8.29132860e-04, 1.66544905e+00,
                                                                                  3 \times 10^{3}
                                                                                                                                   1.48944691e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00], [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01, 2.46696698e+02, 3.85446805e+04, 8.29132861e-04, 1.66544906e+00, 1.66544906e+
                                                                                  2 \times 10^{3}
                                                                                                                                    1.58215442e-13, 1.6\(\rho 632483e + 00\), 2.27792646e + 00, 1.42566852e + 00],
                                                                                                                                   <del>[6<u>1</u>804708<u>6</u>e+02<u>1</u>1.6</del>2788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                               10<sup>-5</sup>
                                  10^{-3}
                                                    10-2
                 10^{-4}
                                                                     10^{-1}
                                                                                                                 10^{-4}
                                                                                                              Full circuit 466966986602, 3.85446805e+04, 8.29132859e-04, 1.66544906e+00, 1.41591772e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
       inducer -> S -| Output (GFP)
                                                                                                                                   [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                                                   1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                  4 \times 10^{3}
                                                                                                                                     2.46696698e+02, 3.$5446804e+04, 8.29132857e-04, 1.66544906e+00,
                                                                                                                                        43715240e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                    8047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                  3 \times 10^{3}
                                                                                                                                           1617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696698e+02, 3.85446805e+04, 8.29132859e-04, 1.66544906e+00, 1.52479435e<del>-13, 1.</del>60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                  2 \times 10^{3}
                                                                                                                                  [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01, 2.46696699e+02, 3.85446805e+04, 8.29132859e-04, 1.66544906e+00,
                                                                                                                                   \frac{10^{59}687875e-13}{10^{60}632483e+00}, 2.27792646e+00, 1.42566852e+00], [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
10^{-5}
                 10^{-4}
                                  10<sup>-3</sup>
                                                    10^{-2}
                                                                      10^{-1}
                                                                                                10^{-5}
                                                                                                                 10^{-4}
              Across all four plots:
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                                   2.46696697e+02, 3.85446805e+04, 8.29132860e-04, 1.66544906e+00,
                  RSS (converged)=0.072
                                                                                                                                   1.47057190e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                   [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                 RSS (initial)=0.231
                                                                                                                                   2.46696698e+02, 3.85446805e+04, 8.29132858e-04, 1.66544906e+00,
                 RSS (% reduction)=0.763
                                                                                                                                   1.55622004e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00],
                                                                                                                                   [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                             epsilon Initial guesses
                                                                                Converged
                                                                                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                         0.000000
                                                     618.047086 6.180471e+02
                                                                                                                                   2.46696700e+02, 3.85446804e+04, 8.29132857e-04, 1.66544907e+00
            Вs
                         0.000000
                                                   16278.856600 1.627886e+04
                                                                                                                                   1.46612098e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00]), array([0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174911, 0.07174911, 0.07174911, 0.07174911, 0.07174911, 0.07174911, 0
                                                   1300.653790 1.300654e+03
                         0.000000
                                                                                                                                  0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981,
                         0.000000
                                                        1.096541 1.096541e+00
                                                                                                                                  0.07174981, 0.07174981, 0.07174981, 0.07174981, 0.07174981,
                         0.000000
                                                   1916.175610 1.916176e+03
                                                                                                                                  0.07174981, 0.07174981]))
                         0.000000
                                                  18874.240800 1.887424e+04
                                                                                                                                       fun: 0.07174981301743372
                                                        0.009030 9.030180e-03
                         0.000000
                                                                                                                                   message: 'Optimization terminated successfully.'
            Νr
                         0.000000
                                                        0.820433 8.204333e-01
                                                                                                                                      nfev: 2458
                      -437.138941
                                                         683.835638 2.466967e+02
                                                                                                                                       nit: 1695
            B h 6080.300299
                                                       32464.380200 3.854468e+04
                                                                                                                                   status: 0
            Ch
                         0.000356
                                                        0.000473 8.291329e-04
                                                                                                                                  success: True
                        -1.155903
                                                        2.821352 1.665449e+00
            Fο
                                                                                                                                          x: array([6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                        -0.632148
                                                        0.632148 1.549369e-13
             Αо
                                                                                                                                  1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                         0.633557
                                                        0.972768 1.606325e+00
            Во
                                                                                                                                  2.46696697e+02, 3.85446805e+04, 8.29132859e-04, 1.66544906e+00,
                         -0.362247
                                                         2.640174 2.277926e+00
                                                                                                                                  1.54936904e-13, 1.60632483e+00, 2.27792646e+00, 1.42566852e+00])
             Со
```

 10^{4}

 10^{3}

 10^{4}

 10^{3}

Νo

-0.493671

1.919339 1.425669e+00