**Figure 4 - Figure supplement 5. Reaction Rates and Population Fractions from Photon Distribution Analysis (PDA).** Fit parameters from PDA. Fits were performed with 2 static and 1 dynamic population, corresponding to distances from seTCSPC Gaussian-distributed states for static populations and exchange between them for the dynamic population. Details of variants can be found in Figure 1-Supplementary File 1 and Table 1.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| FL Variant | *k*AB (ms-1) | *k*BA (ms-1) | *k*R (ms-1) | TR (ms) | Static Fraction A (%) | Static Fraction B (%) | Kinetic Fraction (%) |
| P2-G6 | 4.10 | 3.15 | 7.25 | 0.14 | 0.4 | 4.3 | 95.3 |
| P3-G4 | 3.08 | 2.99 | 6.07 | 0.17 | 9.8 | 25.2 | 65.0 |
| P2-G1 | 4.76 | 3.56 | 8.32 | 0.12 | 1.4 | 8.1 | 90.5 |
| P3-G5 | 1.97 | 5.76 | 7.73 | 0.13 | 19.4 | 1.3 | 83.1 |
| P1-G3 | 4.53 | 7.00 | 11.53 | 0.09 | 25.0 | 8.0 | 67.1 |
| P1-G4 | 3.25 | 4.75 | 8.00 | 0.13 | 0.0 | 25.1 | 74.9 |
| P1-G2 | 0.72 | 8.11 | 8.83 | 0.11 | 27.7 | 0.4 | 72.0 |
| P3-S2 | 5.54 | 3.14 | 8.68 | 0.12 | 6.5 | 3.2 | 90.3 |
| P2-S2 | 2.00 | 7.03 | 9.03 | 0.11 | 27.8 | 1.0 | 71.2 |
| S2-G6 | 7.32 | 5.01 | 12.33 | 0.08 | 2.9 | 0.0 | 97.1 |
| S3-G1 | 5.19 | 6.76 | 11.95 | 0.08 | 11.2 | 2.2 | 86.6 |
| S1-G1 | 3.52 | 5.84 | 9.36 | 0.11 | 1.7 | 14.2 | 84.1 |
| PSG Variant | *k*AB (ms-1) | *k*BA (ms-1) | *k*R (ms-1) | TR (ms) | Static Fraction A (%) | Static Fraction B (%) | Kinetic Fraction (%) |
| P2-G1 | 5.09 | 10.80 | 15.89 | 0.06 | 35.4 | 19.2 | 45.4 |
| P3-G5 | 4.10 | 7.65 | 11.75 | 0.09 | 23.7 | 26.3 | 50.0 |
| P1-G3 | 5.28 | 15.90 | 21.18 | 0.05 | 35.0 | 3.3 | 61.7 |
| P1-G4 | 3.27 | 16.20 | 19.47 | 0.05 | 26.4 | 2.9 | 70.7 |
| P1-G2 | 2.91 | 28.80 | 31.71 | 0.03 | 35.8 | 0.1 | 64.1 |
| P3-S2 | 7.32 | 4.23 | 11.55 | 0.09 | 11.0 | 13.6 | 75.4 |