Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting information:The Origin of Absorptive Features in the Two-Dimensional Electronic Spectra of Rhodopsin

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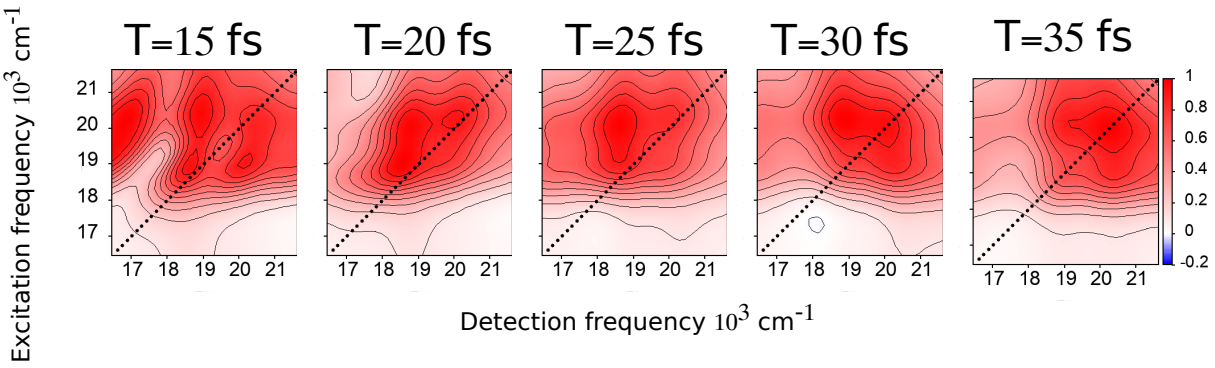

Figure 1: The calculated two-dimensional electronic spectra for the two-state (S_0 and S_1) two-mode (the ethylene stretch mode and the localized torsional mode) model Hamiltonian of the retinal chromophore in the impulsive limit. The other 26 Franck-Condon active vibrational modes of the retinal chromophore in Rh which were observed in the measured resonance Raman were added as a weakly coupled quantum bath to the total Hamiltonian. For more detail about the model Hamiltonian and the computational details see Ref. 1.

References

(1) Johnson, P. J. M.; Farag, M. H.; Halpin, A.; Morizumi, T.; Prokhorenko, V. I.; Knoester, J.; Jansen, T. L. C.; Ernst, O. P.; Miller, R. J. D. The Primary Photochemistry of Vision Occurs at the Molecular Speed Limit. *J. Phys. Chem. B* **2017**, *121*, 4040–4047.