

SUPPLEMENTARY INFORMATION

Figure S1

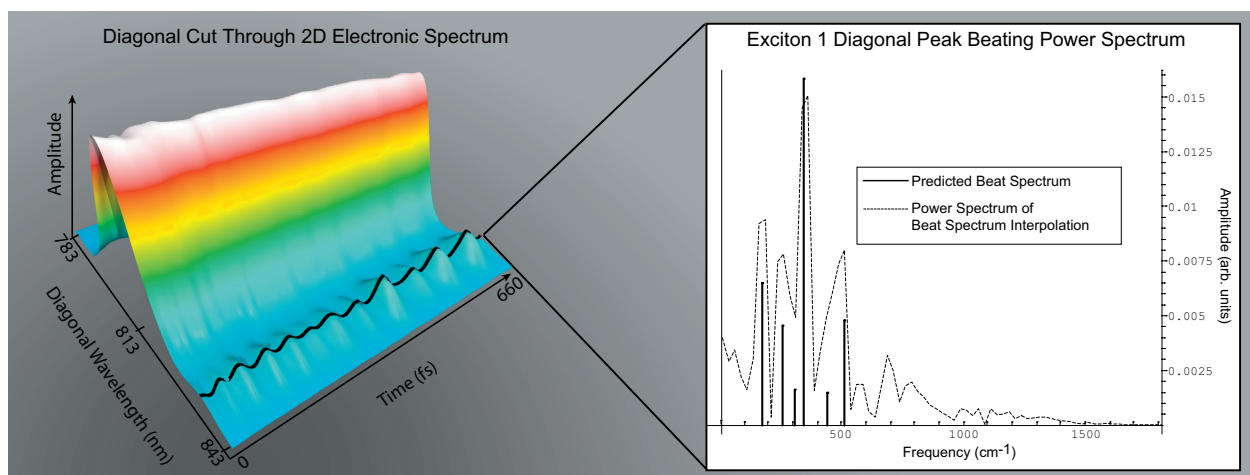


Figure S1: Quantum Beating in FMO: The evolution of amplitude along a cut through the main diagonal (normalized to eliminate population dynamics) of the 2D spectrum is shown to beat with time (black line). The power spectrum of this

interpolation is shown on the right along with the exciton spectrum corresponding to the predicted quantum beating signal.

Figure S2

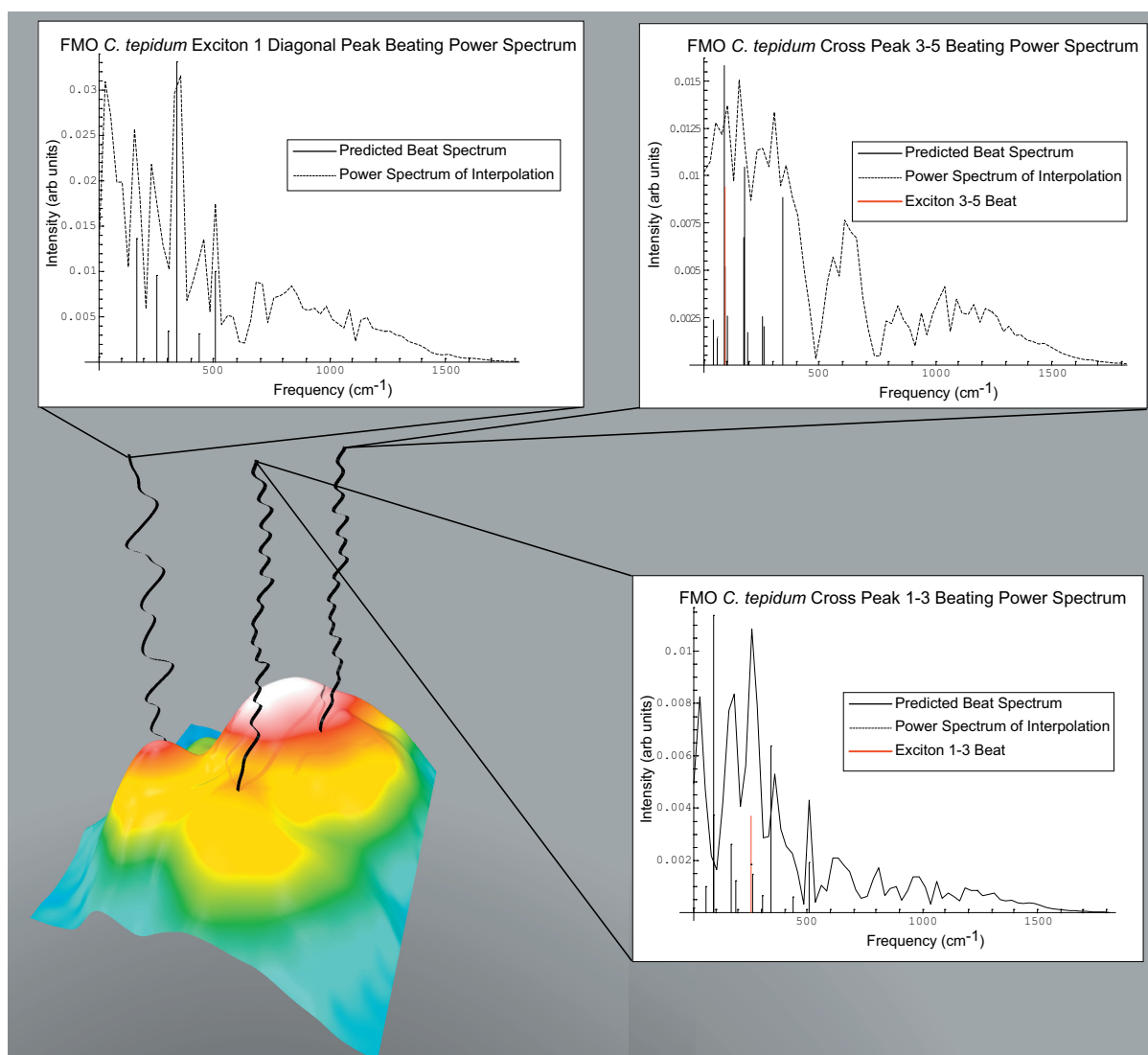


Figure S2: Beating Patterns Throughout the 2D Spectrum: A representative 2D spectrum ($T=510$) is colored with an arcsinh scale to highlight the small cross-peak features. The black lines rising out of the spectrum show interpolations of the raw (unscaled) beating patterns at those locations from population times

$T=0$ to $T=660$ fs. The power spectrum of each interpolation is shown in the corresponding graph with the expected exciton line spectra overlaid. For cross-peaks, the expected dominant beat frequency is shown in red.

Supplementary Movie 1: Spectral Evolution of FMO 2D Spectra: The spectral evolution of the FMO 2D Electronic spectra with ultrafast time resolution is shown. Data from 33 time points is linearly interpolated to create this movie.