

Supplementary Figure Legends

Figure S1: The C13=C14 dihedral torsion angle ($-\circ-\circ-$) and the Schiff-base orientation angle ζ ($-\nabla-\nabla-$) (as defined in Fig.3) are plotted with respect to λ along the *trans*→ \ddagger Ser115→13-*cis*→ \ddagger Asp238→*trans* minimum energy path (MEP) obtained by Conjugate Peak Refinement (CPR, see methods). λ , which is the normalized sum of successive structures taken along the MEP, measures the overall progress of the transition.

Figure S2: Mulliken charge on the retinal Schiff-base group along the *trans*→ \ddagger Ser115→13-*cis*→ \ddagger Asp238→*trans* MEP, measured in absence (—) or presence (○) of the protein charges. Same as Fig.5C, but plotted with respect to the retinal C13=C14 dihedral torsion angle (taken from Fig.S1).

Figure S1

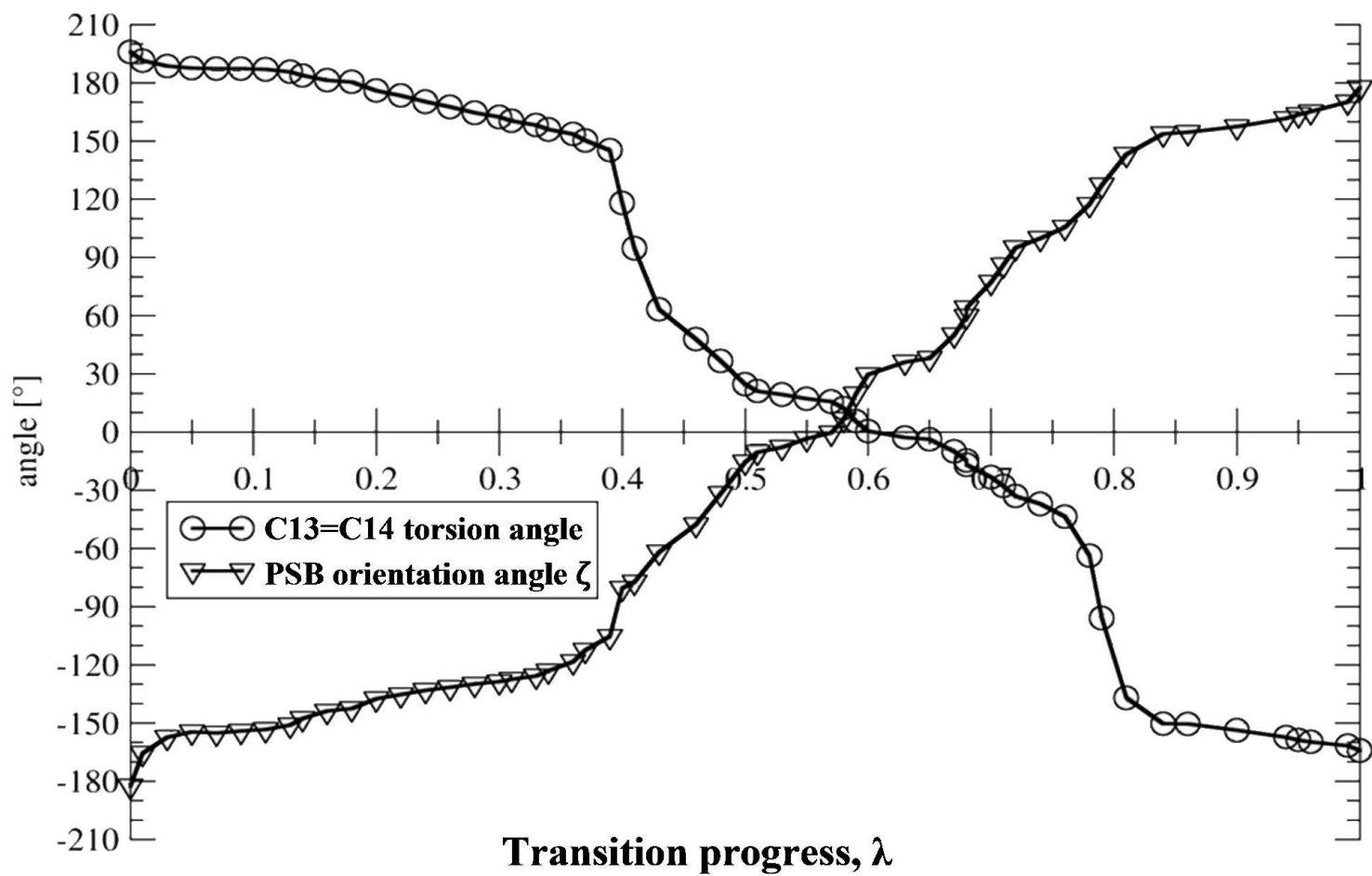


Figure S2

