

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Average Oscillator Strength Per State of a one-dimensional disordered Frenkel exciton system in the Coherent Potential Approximation¹

ABDELKRIM BOUKAHIL, Physics Department, University of Wisconsin-Whitewater, Whitewater, WI 53190, ROBERT SIEMANN, Department of Mathematics, University of Wisconsin-Whitewater, Whitewater, WI 53190, DAVID HUBER, Physics Department, University of Wisconsin-Madison, Madison, WI 53706 — We report the results of studies of the low energy side of the Average Oscillator Strength Per State $f(E) = F(E)/\rho(E)$, where $F(E)$ is the line shape function and $\rho(E)$ is the density of states function of one dimensional Frenkel excitons in the Coherent Potential Approximation (CPA). A Gaussian distribution of the transition frequencies with rms width σ ($0.07 \leq \sigma \leq 0.4$) is used. Our CPA theory predicts that on the low energy side of the peak the tails are short and independent of the disorder parameter σ ; implying a behavior consistent with the Urbach rule. Our CPA results are in excellent agreement with previous investigations.

¹AB acknowledge support from the college of L&S.

Abdelkrim Boukahil
Physics Department, University of Wisconsin-Whitewater,
Whitewater, WI 53190

Date submitted: 09 Nov 2012

Electronic form version 1.4