SENIOR CAPSTONE PRESENTATIONS

PHYSICS DEPARTMENT

WHEN

December 1
12pm – 1pm

LOCATION

Mara Auditorium
Masters Hall, Room 110

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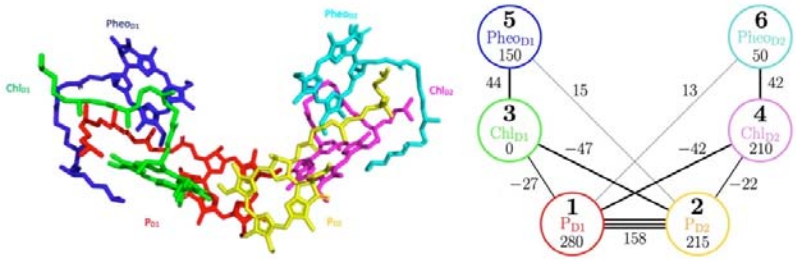
GETTYSBURG COLLEGE, '22

TITLE

The Use of Diabatic States in the Photosystem II Reaction Center Model

ABSTRACT

The photosystem II reaction center (PSII RC) exhibits a structural symmetry in its arrangement of six pigments forming two prominent branches, D1 and D2. Despite this symmetry, the CT has been observed to occur exclusively in the D1 branch. For this reason, the RC has been experimentally studied for years. This experimental data has provided the basis for a general model with the six pigments portrayed as six separate entities. In this work, we test to see if this model can in fact include the pigments as separate entities from each other due to their extreme proximities on the order of 3-4 Å. Through computational analysis of the pigments in the RC, it was found that this small distance does indeed show that the RC is best modeled as a single entity instead of six separate entities. This shows that the current model of the RC is incorrect and needs to be revised to improve future computational analysis of the RC.



(L) The RC within PSII. Six pigments make up the D1 and D2 branches. (R) The current the model of the RC showing the six pigments as separate entities with their respective site energies and coupling values.

Light snacks provided.
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