

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Quantum teleportation in artificial photosystems: possibilities and limitations**<sup>1</sup> MEHDI ZAREA, RAANAN CARMIELI, MARK RATNER, MICHAEL WASIELEWSKI, Northwestern Univ — The possibility of performing quantum teleportation (QT) in a molecular system consisting of an unknown radical spin and a singlet-coupled acceptor-donor pair is studied. The recombination of radical-acceptor pair to its ground state is spin-selective. Here we show that in the presence of exchange interaction between the acceptor and donor, the spin-selective recombination acts as the Bell state measurement. The spin-recombination and the exchange interaction derive the initial quantum state to one of the four Bell states; as a result the spin state of the radical is teleported to the donor spin.

<sup>1</sup>Supported by NSF grant no. CHE-/266201 and by DARPA-QUBE Program: N66001-10-1-4066/P00001

Mehdi Zarea  
Northwestern Univ

Date submitted: 13 Nov 2013

Electronic form version 1.4