

Abstract Submitted
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Interatomic Coulombic Decay Effects in Theoretical DNA Recombination Systems Involving Protein Interaction Sites¹ E.L. VARGAS, D.A. RIVAS, A.C. DUOT, R.T. HOVEY, V.M. ANDRIANARIJAONA, Department of Physics, Pacific Union College, Angwin, CA 94508 — DNA replication is the basis for all biological reproduction. A strand of DNA will “unzip” and bind with a complimentary strand, creating two identical strands. In this study, we are considering how this process is affected by Interatomic Coulombic Decay (ICD), specifically how ICD affects the individual coding proteins’ ability to hold together. ICD mainly deals with how the electron returns to its original state after excitation and how this affects its immediate atomic environment, sometimes affecting the connectivity between interaction sites on proteins involved in the DNA coding process. Biological heredity is fundamentally controlled by DNA and its replication therefore it affects every living thing. The small nature of the proteins (within the range of nanometers) makes it a good candidate for research of this scale. Understanding how ICD affects DNA molecules can give us invaluable insight into the human genetic code and the processes behind cell mutations that can lead to cancer.

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