

Abstract Submitted  
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**Electronic properties of DNA molecules including defects under elongation** SADEQ MALAKOOTI, ERIC HEDIN, YONG JOE, Ball State University — DNA defects may explain the origin of many serious diseases in human body. A recently reported study of DNA flaws shows an increased blood cancer risk from type 2 diabetes [1]. It has also been shown that electrical charge transport properties of DNA molecules are dramatically changed by the presence of any structural defect, which makes an intriguing field of study for researchers. Therefore, we investigate quantum mechanical electron transport along DNA molecules of poly (dG) and poly (dC) base pairs with a single defect. In a tight-binding framework in conjunction with the theories of Slater-Koster and linear elasticity, electronic properties, such as the transmission spectrum and current-voltage characteristics, are studied for different defect locations and different molecular elongations.

[1] A. Bonnefond *et al.*, Nature Genetics **45**, 1040 (2013)

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