

DNA Conductance: A New Approach Using Kubo Formula

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Abstract

A novel approach to estimate DNA conductance based upon Kubo formula is presented and discussed. Using this approach, the effects of base pair mismatches, different conformational changes and base pair sequence on DNA electrical properties were investigated. The results were compared with the data from other methods. The new approach makes possible very fast estimation of conductance spectra for oligonucleotides with hundreds of base pairs and can easily be extended to treat arbitrary chemical modifications of DNA.