Peran loncatan inter-strand di molekul DNA aperiodik dan pengaruh medan listrik serta medan magnet di molekul DNA G4 pada sifat transport DNA = The role of inter-strand hopping in aperiodic DNA molecule and the effect of electric and magnetic fields in G4 DNA molecule on the charge transport DNA

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Abstrak

ABSTRAK
Kami mempelajari sifat transport muatan menggunakan molekul DNA aperiodik dan molekul DNA G4. Molekul DNA aperiodik mempelajari pengaruh nilai loncatan inter-strand pada karakteristik I-V. Molekul DNA G4 mempelajari pengaruh medan listrik dan medan magnet pada panjang lokalisasi, density of state DOS , dan karakteristik I-V. Sifat transport muatan dipelajari dengan menghitung probabilitas transmisi, karakteristik I-V, dan memberikan pengaruh medan listrik dan medan magnet. Pada molekul DNA aperiodik, dipelajari pengaruh nilai hopping inter-strand terhadap probabilitas transmisi dan karakteristik I-V. Probabilitas transmisi dihitung dengan metode transfer matriks, sedangkan karakteristik I-V dihitung dengan formula Launder-Buttiker. Pada molekul DNA G4, dipelajari pengaruh medan listrik dan medan magnet terhadap panjang lokalisasi, density of state DOS, dan karakteristik I-V. Panjang lokalisasi dihitung menggunakan metode transfer matriks, dan density of state DOS serta karakteristik I-V dihitung dengan metode fungsi Green.
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ABSTRACT
The charge transport of aperiodic DNA and G4 DNA molecule have been studied. On the aperiodic DNA molecule, the effect of the inter-strand hopping value on the I-V characteristic has been studied. The effect of the electric and magnetic field on the localization length, density of state (DOS), and I-V characteristics were studied G4 DNA molecule. Charge transport was studied by calculating the transmission probability, the I-V characteristic, by considering the effect of the electric and the magnetic field. In the aperiodic DNA molecule, we study the effect of hopping inter-strand on transmission probability and I-V characteristics. The transmission probability was calculated by the matrix transfer method, while the I-V characteristic was calculated by the Launder-Buttiker formula. In G4 DNA molecule, we studied the effect of the electric and magnetic field on the localization length, density of state (DOS), and I-V characteristic. Localization length was calculated using matrix transfer method, and density of state (DOS) and I-V characteristic was calculated by Green function method.