

Dipole-Dipole Interaction and the Directional Motion of Brownian Motors

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Abstract: The electric field of the microtubule is calculated according to its dipole distribution. The conformational change of a molecular motor is described by the rotation of a dipole which interacts with the microtubule. The numerical simulation for the particle current shows that this interaction helps to produce a directional motion along the microtubule. And the average displacement executes step changes that resemble the experimental result for kinesin motors.

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Key words: dipole, microtubule, kinesin, Brownian motor

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