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Ionic Moving and Selective Mechanism Through Single Channel of Biomembrane[1] LINGYUN ZHANG, PENG-YE WANG, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China — The theoretical model is proposed and aimed at analysis for the ionic moving of single channel of biomembrane. For overcoming the weakness of previous theories, we establish the transport equation that not only meet the diffusion requirement but also illustrate the ionic interaction. The coupled equations of the current and electrochemical potential in the single channel of biomembrane is obtained, which can elucidate the fluctuation of membrane current and the conductive mechanism of channel. The theoretical relation of current-voltage, the current-concentration dependence are in agreement with the experimental results. The model quantitatively analysis the electrical behavior and energy effect on the selectivity for different ions. Furthermore, the ionic distribution and energy varied with the channel distance support the binding site model.

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