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Theory of electron tunneling through DNA basepairs MYEONG LEE, OTTO SANKEY, Department of Physics, Arizona State University, STUART LINDSAY COLLABORATION¹ — Electron tunneling across DNA basepairs is an important issue due to its application in DNA sequencing technology. Transverse electron current through DNA basepairs includes several issues such as electron tunneling through hydrogen bond, the effect of solvent, and the effect of linker, etc. The goal is to use tunneling properties to identify the base in a DNA sequence. Here we will discuss the complexband structure of hydrogen-bonded water chain to get insight into the exponential length dependence of the electron tunneling current through the hydrogen bond. We also create a simple model for electron tunneling through weak interactions between molecular orbitals. Other issues concerning to electron tunneling through DNA basepairs will be discussed.

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