

Investigation of the possibility of solitary waves in the base stacks of DNA. Ladik, J.; Hofmann, D.; Forner, W.; Otto, P

Abstract

The possibility of the existence of solitary waves in DNA is investigated. On the basis of the classical model, such a wave was not found in a polynucleotide, but for a stack of adenine mols. without backbone one was obsd. Possible extensions of the model for DNA were discussed. From these results, it was concluded that solitons exist in stacked systems without an addnl. backbone. At least the degree of freedom which couples a nucleotide base (pair) to the sugar-phosphate backbones (N-C stretching vibration) must be treated with the help of the quantum equations of motion.