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Monte Carlo simulations to investigate the response of RNA molecules to applied tension forces DAN LE, University of Akron, JUTTA LUETTNER-STATHMANN, University of Akron, Department of Physics — In many viruses, genetic information is encoded in single-stranded ribonucleic acid (RNA) molecules. These molecules are very long chains with an interesting secondary structure that is still difficult to predict from the sequence of bases along the chain. In this work, we perform Monte Carlo Simulation of a simple model for RNA molecules under an applied tension force. We determine force-extension curves under equilibrium conditions for tension forces applied to different segments of the chain and investigate the relationship between the mechanical response and the secondary structure of the chain.

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