

The String Method for the Study of Complex Energy Landscapes and Rare Events

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Many problems arising from applied sciences can be abstractly formulated as a system that navigates over a complex energy landscape of high or infinite dimensions. Well known examples include nucleation events during phase transitions, conformational changes of biomolecules, chemical reactions, etc. The system is confined in metastable states for long times before making transitions from one metastable state to another. The disparity of time scales makes the study of transition pathways and transition rates a very challenging task. In this talk, I will present the string method for the study of complex energy landscapes and the associated transition events.