

**Special
Joint Condensed Matter
and Center for Soft Matter and
Biological Physics Seminar
Virtual Only**

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(Physics & Astronomy, University of California, Irvine)

**“Probing Transcription Machinery in Modules via
Physical Modeling and Computational Interrogation”**

Friday, October 28, 2022

4:00pm – 5:00pm

Zoom Link: <https://virginiatech.zoom.us/j/5920910234>

Molecular machinery regulating gene transcription in central dogma consists of factor proteins and enzymes responsible for locating promoter sequences and then initiating and elongating for template-based synthesis of RNA. Implementing physical modeling and simulation from atomic to coarse-grained level, along with polymer physics, statistical mechanics, and stochastic kinetic/dynamics approaches, we have re-examined transcription factor diffusional search along DNA, explored RNA polymerase promoter recognition, investigated particularly the polymerase mechanochemical and fidelity control mechanisms during elongation, and further probed DNA supercoiling as mechanical feedback in the transcription.