

Abstract Submitted  
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**Wide Field Spectroscopy of Diffusing and Interacting DNA Using Tunable Nanoscale Geometries**<sup>1</sup> SHANE SCOTT, JASON LEITH, HUGO BRANDAO, SIMON SEHAYEK, ALEXANDER HOFKIRCHNER, JILL LAURIN, DANIEL BERARD, ALEXANDER VERGE, PAUL WISEMAN, SABRINA LESLIE, McGill University — It remains an outstanding challenge to directly image interacting and diffusing biomolecules under physiological conditions. Many biochemical questions can be posed in the form: Does A interact with B? What are the energetics, kinetics, stoichiometry, and cooperativity of this interaction? To tackle this challenge, we use tunable nanoscale confinement to perform wide-field imaging of interacting DNA molecules in free solution, under an extended range of reagent concentrations and interaction rates. We present the integration of “Convex Lens-induced Confinement (CLiC)” microscopy with image correlation analysis, simultaneously suppressing background fluorescence and extending imaging times. The measured DNA-DNA interactions would be inaccessible to standard techniques but are important for developing a mechanistic understanding of life-preserving processes such as DNA transcription.

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