

Abstract Submitted
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Unwinding of double-stranded DNA and branch migration of Holliday junctions by hexameric motor proteins NOAH RIBECK, Physics Department, University of California Santa Barbara, OMAR A. SALEH, Materials Department and BMSE Program, University of California Santa Barbara — Ring-shaped hexameric helicases are critical components of the DNA replication machinery in eukaryotes and bacteria. It has been shown that in vitro, certain hexameric helicases such as Mcm4,6,7 from eukaryotes, and DnaB from *E. coli* can translocate while encircling either single-stranded DNA (while opening a DNA fork in advance of the protein) or while encircling double-stranded DNA. Further, the latter translocation mode can drive branch migration of Holliday junctions. Using magnetic tweezers, we have performed single-molecule measurements of the activity of DnaB and the Mcm complex during both fork-opening and branch migration. We will report on progress of measurements of velocity of these motors in each mode, and relate the results to theoretical models of active and passive unwinding.

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