Deep image analysis of entangled ring-shaped DNA

HYEONGJU KIM, AH-YOUNG JEE, STEVE GRANICK, Institute for Basic Science —

Ring-shaped DNA entangled in aqueous actin networks and observed by super-resolution microscopy (STED; stimulated emission depletion) offers rich data for comparison with unresolved questions of polymer physics. Using home-written software, we calculated not only the center of mass (CoM) and CoM trajectories of hundreds of molecules, but also analyzed conformation dynamics with statistical analysis including wavelet transformation and a correlation matrix approach. The analysis reveals some surprising aspects unanticipated by classical theories.