

Abstract Submitted
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Persistence Length of Stable Microtubules¹ TAVIARE HAWKINS,
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Amherst — Microtubules are a vital component of the cytoskeleton. As the most
rigid of the cytoskeleton filaments, they give shape and support to the cell. They are
also essential for intracellular traffic by providing the roadways onto which organelles
are transported, and they are required to reorganize during cellular division. To
perform its function in the cell, the microtubule must be rigid yet dynamic. We are
interested in how the mechanical properties of stable microtubules change over time.
Some “stable” microtubules of the cell are recycled after days, such as in the axons
of neurons or the cilia and flagella. We measured the persistence length of freely
fluctuating taxol-stabilized microtubules over the span of a week and analyzed them
via Fourier decomposition. As measured on a daily basis, the persistence length
is independent of the contour length. Although measured over the span of the
week, the accuracy of the measurement and the persistence length varies. We also
studied how fluorescently-labeling the microtubule affects the persistence length and
observed that a higher labeling ratio corresponded to greater flexibility.

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