

Abstract Submitted  
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**Obstructions Inhibit Long-range Motor Motility in Microtubule Bundles** M.W. GRAMLICH, University of Massachusetts - Amherst — Efficient cellular transport along the cytoskeletal network is essential for cell growth and maintenance. Everything from microtubules to plasma membrane components are transported along the cytoskeletal network. Long-range transport is accomplished by molecular motors carrying cargo along a microtubule network. Recently, the role of the microtubule bundle geometry has begun to be explored. Microtubules bundle together in order to efficiently direct transport. Consequently, bundled microtubules introduce a new set of parameters which affect cellular transport, such as bundle spacing or microtubule polarity. Even previously tested parameters need to be re-considered, such as the role of obstructions. In this talk I will focus on the relationship between obstructions and microtubule polarity, and their affects on long-range transport. Microtubule polarity varies from completely uniform, with all plus-ends pointing in the same direction, to completely random. I will quantitatively show how obstructions inhibit long-range motor motility in any bundle, regardless of the distribution of microtubule polarity within the bundle. However, inhibition of long-range transport is greater in mixed polarity bundles. This result has implications for how cells use microtubule polarity to accommodate obstructions in order to efficiently direct transport.

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