

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Interaction of Semi-flexible Filaments and Molecular Motors<sup>1</sup>**

DMITRY KARPEEV, IGOR ARONSON, Argonne National Laboratory, LEV TSIMRING, University of California at San Diego, HANS KAPER, Argonne National Laboratory/National Science Foundation — We consider effects of finite flexibility on interaction of two microtubules with molecular motor. On the basis of numerical solution to nonlinear elasticity equation we show that the flexibility enhances tendency of microtubules to align, which, in turn, favors formation of large-scale structures in the multi-tubules system. Moreover, for much softer filaments, like actin, we observed that the action of the motor may result in formation of multiple loops due to buckling of the filaments.

<sup>1</sup>This work was supported by U.S. DOE grants DE-AC02-06CH11357 (DK,IA,HK) and DE-FG02-04ER46135 (LT)

Dmitry Karpeev  
Argonne National Laboratory

Date submitted: 20 Nov 2006

Electronic form version 1.4