Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Time-resolved studies of actin organization by multivalent ions and actin-binding proteins GHEE HWEE LAI, KIRSTIN PURDY, University of Illinois at Urbana-Champaign, JAMES R. BARTLES, Northwestern University, GERARD CHEE LAI WONG, University of Illinois at Urbana-Champaign — Actin is one of the principal components in the eukaryotic cytoskeleton, the architecture of which is highly regulated for a wide range of biological functions. In the presence of multivalent salts or actin-binding proteins, it is known that F-actin can organize into bundles or networks. In this work, we use time-resolved confocal microscopy to study the dynamics of actin bundle growth induced by multivalent ions and by espin, a prototypical actin binding protein that is known to induce bundles. For divalent ion induced bundles, we observe a rapid lateral saturation followed by longitudinal growth of bundles, in sharp contrast to the bundling mechanism of espin, which favors finite length bundles.

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Date submitted: 19 Nov 2006 Electronic form version 1.4