

Abstract Submitted
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Dynamics of focal adhesions modulates active cellular response¹

MOUMITA DAS, SHILADITYA BANERJEE, M. CRISTINA MARCHETTI, Department of Physics, Syracuse University — The cytoskeleton of living cells connects to and senses the extracellular mechanical environment through protein clusters called focal adhesions. We study how the mechanics and dynamics of focal adhesions influence the distribution of mechanical stresses and deformations in a cell which is modeled as an active elastic gel. We carry out our investigations for two types of bond dynamics of focal contacts (a) slip bond dynamics where the bonds are weakened by a tensile mechanical force and (b) catch bond dynamics where they are initially strengthened upon application of a tensile mechanical force, and undergo failure at very large forces. We comment on the effect of different types of focal adhesions on the transmission and regulation of cell traction forces and on cellular mechanosensing.

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