Collective motility of cells on deformable substrates\textsuperscript{1} ARVIND GOPINATH, MICHAEL HAGAN, BULBUL CHAKRABORTY, APARNA BASKARAN, Martin Fisher School of Physics, Brandeis University, BRANDEIS UNIVERSITY TEAM — We consider a simple model for motile cells on deformable substrates. The cells interact through contact interactions and medium-mediated elastic interactions arising due to the adhesion of the cells to the substrate. Using Brownian dynamics simulations and systematic coarse graining of the microscopic model, we characterize the collective velocity field of such a collection of cells by calculating the velocity autocorrelation function and identify the role of elastic interactions in the emergent motility of cell sheets. Our findings include suppression of diffusivity due to the attractive part of the elastic interaction and a growing length scale in the velocity correlations.

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