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Differential dynamic microscopy studies of collective cell dynamics

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We discuss the use of a recently developed microscopy technique,
differential dynamic microscopy (DDM), for studying the collective dynamics of two dimensional assemblies of living cells. DDM is a Fourier-space image analysis method that allows one to obtain the equivalent of multi-angle dynamic light scattering data using an ordinary white-light microscopy set-up and a digital video camera. The dynamical information obtained in a DMM experiment is a direct probe of collective cell motion on a range of length and time scales. As such, DMM measurements of cell dynamics are complimentary to direct cell tracking and PIV methods. We illustrate
this approach with examples of motile populations of cell at different densities on model substrates.

Authors: GIAVAZZI, Fabio (Universitá degli Studi di Milano); HARDEN, James L. (University of Ottawa); GOLIPOUR, Rahil (University of Ottawa); CERBINO, Roberto (Universitá degli Studi di Milano)

Presenter: HARDEN, James L. (University of Ottawa)

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