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Monodisperse domains by proteolytic control of the coarsening instability[1] JULIEN DERR, Harvard University, PATRICK MCKELVEY, ANDREW RUTENBERG, Dalhousie University — The coarsening instability typically prevents steady-statecluster-size distributions. We show that proteolysis, or degradation coupled to the cluster size, leads to a novel fixed-point cluster size. Stochastic evaporative and condensative fluxes determine the width of the size distribution. We investigate how the peak size and width depend on number, interactions, and proteolytic rate. This proteolytic size-control mechanism can lead to interesting self-organization phenomena in biology. In particular, we demonstrate how this model is consistent with the experimental phenomenology of pseudo-pilus length control in bacterial type 2 secretion systems.

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Julien Derr
Harvard University

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