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**Velocity fluctuations in steadily sedimenting suspensions** K. VIJAY KUMAR<sup>1</sup>, SRIRAM RAMASWAMY, CCMT, Department of Physics, Indian Institute of Science, Bangalore 560012 — The simplest model of a homogeneous suspension steadily sedimenting under gravity at low Reynolds number indicates that the velocity fluctuations should diverge with the system size. This is, however, not seen in experiments. We improve on a previously described coarse-grained model proposed for this problem by identifying certain crucial missing terms in the equations of motion. These terms are allowed by symmetry considerations and can be generated by a mechanism which is natural in the dynamics of low Reynolds number sedimentation. A dynamical renormalization group calculation of our model leads to the conclusion that these extra terms are always relevant. If these terms are stabilizing, this suggests a natural mechanism for suppressing fluctuations in sedimenting suspensions. We analyze the properties of the critical point where these extra terms vanish.

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