BOB PEGO, Carnegie Mellon Univ., Dept. Math. Sciences, Pittsburgh, PA 15213
Scaling dynamics of coagulation equations with dust and gel

We study limiting behavior of rescaled size distributions that evolve by Smoluchowski's rate equations for coagulation, with rate kernel $K = 2$, $x + y$ or xy. We find that the dynamics naturally extend to probability distributions on the positive half-line with zero and infinity appended, representing populations of clusters of zero and infinite size. The "scaling attractor" (set of subsequential limits) is compact and has a Levy–Khintchine-type representation that linearizes the dynamics and allows one to establish several signatures of chaos. In particular, for any given solution trajectory, there is a dense family of initial distributions (with the same initial tail) that yield scaling trajectories shadowing the given one for all large time.