

SELF-SIMILARITY FOR A GENERALIZED SMOLUCHOWSKI COAGULATION EQUATION

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We investigate the well-posedness and asymptotic self-similarity of solutions to a generalized Smoluchowski coagulation equation arising in continuous-state branching theory. Specifically, we consider the evolution equation for the Levy measure of a continuous-state branching process. As noted by Bertoin and LeGall, this equation models a type of coagulation dynamics based on n -ary interactions ($n \geq 2$). We show that the existence of nontrivial scaling limits is fundamentally linked to regular variation conditions on the branching mechanism and the initial cluster-size distribution. We obtain, as a special case, the self-similarity results of Menon and Pego for the classical Smoluchowski model with constant rate kernel $K(x, y) = 2$. This is joint work with Gautam Iyer and Bob Pego.