Coagulation estimates and Smoluchowski equations.

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ABSTRACT: We discuss key convergence results for the derivation of Smoluchowski's coagulation equations from two models of particles whose free motion is interrupted by coagulation events, which happen on collision. In the first one, a 1–dimensional model, it is necessary to introduce positive rates of coagulation. The second model, which approximates coagulation for inertial particles, considers a system of clusters that behave as Brownian motion on the scale of the mean square displacement but as integrated Ornstein Uhlenbeck processes on the scale of the particle radius.