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The Trapping Reaction with Mobile and Reacting Traps BENJAMIN VOLLMAYR-LEE, ROBERT RHOADES, Bucknell University — We study the trapping reaction $A + B \rightarrow B$ in the case where both species of particle are mobile, and the traps themselves are annihilating $B + B \rightarrow 0$ or coagulating $B + B \rightarrow B$. We allow for a mixed trap reaction, with probability p of annihilation and $1 - p$ of coagulation, for the general case of unequal diffusion constants and variable trapping rate. We develop a computational technique that enables determination of the full probability distribution of the A particles for a particular realization of the B particles, which provides highly accurate measures for the A particle density and correlations. The A particle density is found to exhibit power law decay in all cases with a nontrivial decay exponent, and the A particle correlations exhibit scaling with an anomalous dimension. Our results are compared with various exact solutions, Schmoluchowski theory, and renormalization group predictions in applicable limits.

Prefer Oral Session
 Prefer Poster Session

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