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**On  $n$ -point densities of the point measures in the  
Arratia flows and their approximations**

Abstract

We discuss the  $n$ -point densities arising in the consideration of finite-dimensional motions of the Arratia flow and describing sequences of collisions in the flow. An explicit expression for them is derived. The initial interval being discretized, the convergence of the corresponding approximations of such densities is discussed. The case of the nontrivial drift is treated by using the analog of the Girsanov theorem, and expressions for the corresponding densities are given in terms of the  $n$ -point densities of the Arratia flow with zero drift and related constructions.