

1641 Stochastic Differential Equation Model for Cotton Fiber Breakage

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"In the cotton system, fiber breakage occurs in all mechanical processes undergone by the lint from the field to the spinning mill. The direct impact of breakage on fiber length distribution and on the incidence of short fibers represents a long-lasting concern in the cotton industry. The rich body of work dealing with modeling cotton fiber breakage attests to the importance of breakage phenomena in the cotton system. Building on this body of knowledge, our research introduces a new approach to modeling fiber breakage based on stochastic differential equations (SDE). The SDE model generalizes the classic deterministic model and offers a better understanding of fiber breakage and of the origination of different fiber length distributions."